# Return on Investment (ROI) 'Zcf' I gUV] ']hm

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# **Executive Summary**

Ease of use doesn't come from wishing for it. It comes from systematic usability engineering activities throughout the project lifecycle. This is real work and costs real money, though not as much as some people might fear. Simple forms of user testing can be conducted in a few days and will generate extensive insights into user behavior and recommended design improvements. Still, before a company commits to a lifecycle approach to usability, they want to know what it will cost and what they will gain, so we present this research to help answer those questions.

#### **COST OF USABILITY**

To assess the total cost of usability (as opposed to the price of a single test), we collected data from hundreds of design projects that included usability activities. Depending on how the estimate is made, the proportion of these projects' budgets that was spent on usability was 10% to 13%.

Based on this finding as well as findings from other surveys, we conclude that current best practices call for spending around 10% of a project's budget on usability.

The full data from our survey give rise to a slightly complicated mathematical model that relates project size to recommended spending on usability. Briefly, the cost of usability doesn't increase linearly with the size of the project, because many usability activities cost about the same no matter how big the project. Although an average project should spend 10% of its budget on usability, a project with 10 times the budget usually needs to spend only four times more.

#### **BENEFITS FROM USABILITY**

We collected data from 72 cases where usability metrics were available from projects (mainly websites) that had been redesigned for usability. For the purposes of our analysis, we needed cases in which the same metric had been collected both before and after the redesign, so we could make an accurate comparison and estimate the percentage improvement in usability. Such projects are hard to find because qualitative studies are the most common (and indeed the cheapest and usually the recommended practical approach to improving usability).

Averaged across the 72 pairs of measures (excluding eight outliers with exceptionally large improvements in usability), usability increased by 109%. With these outliers included, the average improvement was 160%.

The improvement in usability metrics differed depending on what was being measured:

Metric	Average Improvement Across Web Projects
Sales / conversion rate	87%
Traffic / visitor count	91%
User performance / productivity	112%
Use of specific (desired) features	174%

Our current study does not include cases from intranet redesigns, but based on two collections of intranet statistics, we estimate the improvement in intranet usability metrics to be slightly lower these numbers.

That Internet website usability tends to increase more than intranet usability is not surprising. Usability for Internet websites is dominated by the need to avoid user errors in navigation and the interpretation of new information (primarily by new users), but intranet users have more experience using their intranet.

Data we collected from computer design projects before the Web showed that usability can improve error-avoidance substantially more than skilled-user performance. Web usability is closely related to error-avoidance, whereas intranet usability is a mix of error-avoidance and skilled-user performance. Because employees need to deal with only one design in a well-managed intranet, they eventually achieve some degree of skilled performance.

#### **ESTIMATING ROI**

We estimate that usability, on average, can be doubled, and you should spend about 10% of a project's budget on usability activities. Unfortunately, these estimates do not lead to an ROI number in the classic sense, because the two parameters are measured in different units: project cost is measured in money and usability is measured in increased use, more efficient use, or greater user satisfaction.

Converting usability improvements to dollars is easy for e-commerce, where doubled sales have an immediate monetary value. For intranets, productivity gains are also fairly easy to convert into monetary estimates: simply multiply time saved by the hourly cost of your employees.

Other types of design projects are harder to convert into an exact ROI. What is the value of increased customer satisfaction? What is the value of more traffic or more use of those features you want to promote on your website? Those estimates will vary between companies, and thus the monetary value of doubled usability will also vary. But it will be substantial in most cases.

The return on investment from usability is almost always larger when more people are using the design, because the benefits increase for every user who finds the system easier to use. Similarly, doubling sales numbers results in more income for ecommerce sites that had larger sales to begin with.

The estimated productivity gains from redesigning an intranet to improve usability are eight times larger than the costs for a company with 1,000 employees; 20 times larger for a company with 10,000 employees; and 50 times larger for a company with 100,000 employees.

Because the gains are so much larger than the costs, we believe that the allocation of budget share to usability will increase in the future, at least in big companies. Currently, we recommend spending 10% of a project's budget on usability, but optimal ROI will probably require spending 20% or more.

Of course, there will be some point at which the value from extra spending on usability is less than the value of extra spending on other components of a project. But we don't know where returns start to diminish, because we are nowhere near this point in current practice.

# **Cost of Usability**

The cheapest usability study we have conducted was during the design of Sun Microsystems' first intranet, SunWeb, in 1994. We grabbed a sheet of icon designs from Darrell Sano's printer and took it downstairs to the cafeteria where we showed the icons to four randomly selected employees in the lunch line. Total time to get usability data about users' interpretation of the draft icons: 30 minutes. Sure enough, even though many of the icons were great, some didn't work and had to be redesigned. Later, we ran more in-depth studies of the intranet design, but the example shows that some usability activities can be very fast and cheap.



Early icon intended to represent a toolbox.

Test users' interpretation: Briefcase, personal info, briefcase, toolbox, briefcase. Conclusion: this icon looked too much like a briefcase and was redesigned.

Usability is rarely as cheap as this example, but the best projects are often those that conduct a study in the shortest possible amount of time, allowing for more activities within the available budget.

What should the usability budget be? Honestly, we don't know for sure, because usability is still an emerging discipline. Still, we can make some estimates and describe best practices, which is what we do in this report.

#### 2001 SURVEY OF BEST PRACTICES

From November 2000 to April 2001, Nielsen Norman Group organized the User Experience World Tour, <sup>2</sup> a conference series about usability and related topics. The tour included conferences in the following cities: New York, NY; Chicago, IL; Austin, TX; San Francisco, CA; Seattle, WA; London, England; Munich, Germany; Stockholm, Sweden; Tokyo, Japan; Hong Kong, China; and Sydney, Australia.

Conference participants were given a survey asking them for the characteristics of their current projects. Respondents were guaranteed complete anonymity. 1,078 of the 2,682 conference participants returned the survey, for a response rate of 40%. Of the completed surveys, 969 provided data about projects, corresponding to 90% of respondents.

Of the 969 respondents who provided project data, 71 (7%) stated that their projects had zero usability on a scale of 0% to 100%. We have excluded these projects from the following analyses because we want to assess the current state of affairs among projects that do include usability.

For the world at large, it is virtually guaranteed that much more than 7% of design projects are completed without any usability activities. Conducting a survey at a user

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<sup>&</sup>lt;sup>1</sup> A full report about the usability activities in this design project was presented at the World Wide Web Consortium's official conference in 1994. The paper can be found at <a href="http://www.useit.com/papers/sunweb">http://www.useit.com/papers/sunweb</a>

<sup>&</sup>lt;sup>2</sup> For more information about the User Experience World Tour and for interviews with usability professionals in each of the 11 cities, see <a href="http://www.nngroup.com/worldtour">http://www.nngroup.com/worldtour</a>

experience conference obviously results in a biased sample because only companies with an interest in usability would pay to send staff to such an event. So the fact that 7% of the projects in our survey had zero usability is not representative of design projects in general.

Based purely on our informal assessment of the situation, we would estimate that about 80% of all design projects have zero investment in usability. We don't have an accurate estimate of this number and it is not important for the goal of the present report, which is to estimate *best* practices, not worst practices.

Of the 969 respondents who provided project data, 35 (4%) stated that their projects had 100% usability. We have also excluded these projects from the following analyses because a project with 100% of its budget devoted to usability cannot be a real design project that results in an operational system. We assume that the respondents who did 100% usability were full-time usability consultants, although we cannot know for sure because of the anonymity of the respondents.

After excluding respondents with zero or 100% usability, we were left with 863 respondents who provided useful data. We used this information to estimate best practices in allocating usability budgets for design projects.

We should emphasize that the data represents best practices in usability as of 2001. The data was collected at an elite user experience conference that the average attendee had paid more than USD \$1,000 to attend. Thus, there is an inherent selection bias that has excluded companies that do not care much for usability, because such companies would not be likely to invest the conference fee and the time for their staff to attend. This selection bias is acceptable for the purposes of the present analysis, which aims at estimating usability budgets for companies that do have a commitment to usability.

The 863 projects included about four person—years per project. The projects ranged from many small projects of less than one person—year in size to a monster project of 1,600 person—years. Because the projects were mainly Web and intranet design projects, it is understandable that smaller projects tended to dominate. The 1,600-person—year project has been excluded as an outlier in the following analyses.

Totaled across the respondents (excluding the outlier), the projects represented 3,394 person-years of effort of which 271 person-years were usability investment. Thus, the mean investment in usability was 8% of the budgets for these design projects.

The median may be a better indicator of current best practices than the mean because the mean is highly impacted by a fairly small number of big projects, even after excluding the outlier. The median is the level at which half of the projects have a smaller investment and half of the projects have a bigger investment in usability.

In our survey, the median investment in usability was 13% of the budgets for these design projects.

Interestingly, the median investment in usability was exactly the same in Australia/New Zealand, Europe, and the United States/Canada. All three regions had 13% as their median budget share for usability. We had too few responses from other parts of the world to make reliable estimates for regions except the three mentioned.

As discussed in the following section, there are many parameters that influence the actual investment in usability, so it is impossible to give a single number as the

recommended budget for all projects. Still, it's nice to have a number that can serve as the general recommendation or the default budget from which to make adjustments relative to the specific circumstances of the individual project.

We have two different estimates of the average usability budget from our survey: 8% mean and 13% median. Combining the two leads us to a general estimate of 10% as the proportion to devote to usability in a Web design budget, according to predominant best practices in 2001.

#### 2006 SURVEY OF BEST PRACTICES

Because the original survey was conducted at the height of the dot-com bubble, we wanted to collect newer data that would be representative of usability budgets during more normal times. We thus repeated the survey at the Usability Week 2006 conference in New York, San Francisco, London, and Sydney.

Because this was a smaller conference, with fewer cities, fewer responses were collected. In total, we got responses from 193 projects, of which we excluded 50 for either providing too little data or for having too much or too little usability.

As in the first survey, several respondents had zero usability on their projects: 29 projects (15%) were eliminated for this reason. Again, we want to analyze the situation in companies that do employ usability on their projects, so data from companies that are still at the stage of *thinking* about usability cannot be used.

8 companies (4%) were excluded for doing too much usability (at least 80% of their budgets). Such companies are likely to be usability consultants or otherwise work on usability in a way that's not representative of a real development project.

Finally, 13 companies (7%) provided insufficient data for our data analysis.

After eliminating projects with inadequate or outlying data, we had responses from 143 projects for the data analysis.

The average project size was 106 person-months or almost nine person-years. Most design projects are not huge, though there were a few projects at the scale of thousands of person-years.

The average usability effort was 6 person-months, or half a year. This may not seem like a lot, but it's possible to conduct a very large amount of user research in half a year of dedicated effort.

The ratio between the usability effort and the total project budget was as follows:

- 10% median
- 17% mean

In the 2001 survey, the median was greater than the mean. This time it's the other way around. The difference is probably due to the fact that the projects were more than twice as big on average in 2006 as they were in 2001.

During the dot-com bubble, many Web projects were "quick hits" in the hope of scoring fact bucks. Now, projects tend to be more robust and also tend to take place in major corporations or government agencies as opposed to the small startups that dominated the bubble era.

For both the 2001 and 2006 surveys, we could construct a regression model to statistically predict the most likely usability budget for design projects of different sizes. (See below for more detail about the 2006 statistical model.)

Using these statistical models, we can compute the most likely usability budgets for four common sizes of design projects, as shown in the following table:

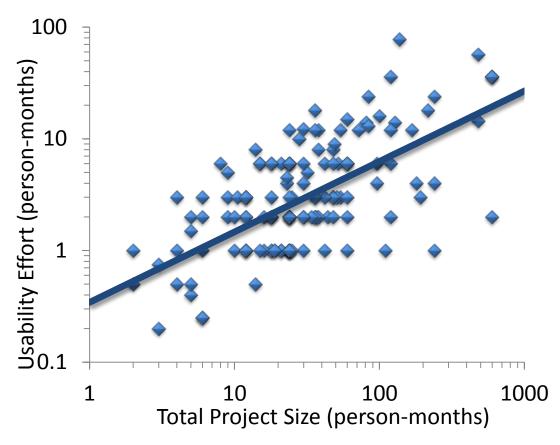
Total Project Size	2001 Usability Effort	2006 Usability Effort
6 person-months	1.0	1.0
12 person-months	1.5	1.6
100 person-months	5.0	6.2
1,000 person-months	19	27

**Table 1.** All numbers in person-months; 12 person-months = one person working for one year or two people working for half a year, and so on.

Comparing the two sets of data shows that usability investments have grown for bigger projects, but not much for small projects. To the extent that the recommended budget share is 10%, the biggest projects are still far behind in allocating sufficient resources to usability.

## **DETAILED REGRESSION MODEL FOR USABILITY BUDGETS**

The following figure is a scatterplot showing the responses from the second survey plotted on a double-logarithmic scale. Each dot represents one project.



**Figure 1.** Scatterplot of total project budgets versus the usability budgets in the same projects. Both axes use logarithmic scales.

The horizontal axis represents the total size of each project, and the vertical axis represents the amount of time devoted to usability on the project. Both axes are measured in person–months, where 12 person–months correspond to one person–year.

The straight line represents the best-fit regression line through the data.

A straight line on a double-logarithmic chart represents a power function. For our data, the regression equation is as follows:

usability budget = 0.343 project\_size<sup>0.63</sup>

(measuring both usability budgets and project size in person-months)

Because a power of 0.5 is the same as the square root, we conclude that the usability budget increases by somewhat more than the square root of the size of the project. In other words, a project that is four times bigger would only need about twice as much usability (to be precise: 2.4 times as much usability). As another way of looking at the same formula, a project that is 10 times bigger would need about four times as much usability.

For this regression equation,  $R^2 = .41$ , meaning that 41% of the variance in usability budgets is explained by knowing the total budget for a project. Thus, the remaining 69% of variance must be caused by other factors.

The four main determinants of usability budgets other than total project size are likely to be:

- The organization's maturity with respect to usability. As further discussed below, usability tends to increase over time, <sup>3</sup> so companies with a long history of usability involvement in their projects are likely to devote a larger percentage of budgets to usability.
- Management commitment to quality for the specific project. This commitment may come from top management or the manager running the project. The more management wants to emphasize quality, the more it spends on quality assurance elements, such as usability. Conversely, the more management views a specific project as a get-rich-quick scheme in which quality is unimportant, the less it spends on usability.
- How well the usability stakeholders argue for resources. Some people are just better than others at getting funding.
- The domain of the project. Some types of designs inherently need to be more usable than others, for example because they target users with low commitment or few skills or because the cost of failure is high. Also, some types of projects are almost all user interface, whereas others require complex programming and other implementation and yet have almost no user interface and thus few needs for usability.

It is reasonable that usability doesn't increase linearly with the size of the full project. Many usability activities take about the same amount of time, no matter whether you are testing a big or a small project. A big project likely has more things to test, and it may have more screens to review for heuristic evaluation activities. Still, any individual test takes the same amount of time to plan, run, and analyze for the usability staff, no matter how much time other team members spent getting the design ready for testing or other usability activities.

In the 2001 survey, respondents were asked to assess subjectively whether they had sufficient staff, budget and time available for usability on their current projects. On a 1–7 scale, where 1 indicates strong dissatisfaction and 7 indicates strong satisfaction, the average ratings were as follows:

Sufficient staff: 3.2Sufficient budget: 3.0Sufficient time: 2.9

All of these ratings are lower than 4, which is the neutral point on the scale. In other words, respondents were slightly dissatisfied with all three parameters. Of course, it should be noted that the respondents were mostly the people who were in charge of

<sup>&</sup>lt;sup>3</sup> In his book *The Trouble with Computers* (MIT Press, 1995) Thomas K. Landauer estimated that the usability of text editing increased by 9% per year, based on studies performed in various years during the history of this class of software. In a shorter-term study, we found that a sample of e-commerce sites had increased their average compliance with 207 usability guidelines for e-commerce from 45% to 49% over a 1.5-year period (late 2000 to mid-2002, see <a href="http://www.useit.com/alertbox/20020624.html">http://www.useit.com/alertbox/20020624.html</a>). No matter what happens in individual projects — which often ignore usability — the overall picture is clear: when viewed over longer-term periods, usability tends to increase across the industry at large.

usability on the projects, so one would almost *expect* them to be dissatisfied with the resources available for their part of the project.

Even though the differences among the assessments of the three types of resources are fairly small, it is interesting to observe that respondents were the most dissatisfied with the amount of time available for usability on their projects. In other words, they felt too rushed. This may be an artifact of the time when the survey was performed: early 2001, which was the end of the dot-com bubble, when most projects did run on a very accelerated schedule. It would be interesting to repeat the survey now and see whether the relative ratings have shifted, maybe to budgets being rated the most dissatisfying, which would be our guess based on our conversations with clients and attendees at our conferences.

## DIFFERENCES BETWEEN THE UNITED STATES, EUROPE, AND AUSTRALIA

Because the 2006 survey was conducted on three different continents, we can compare the approach to usability budgets in North America with that in the U.K. and Europe as well as with Australia and New Zealand.

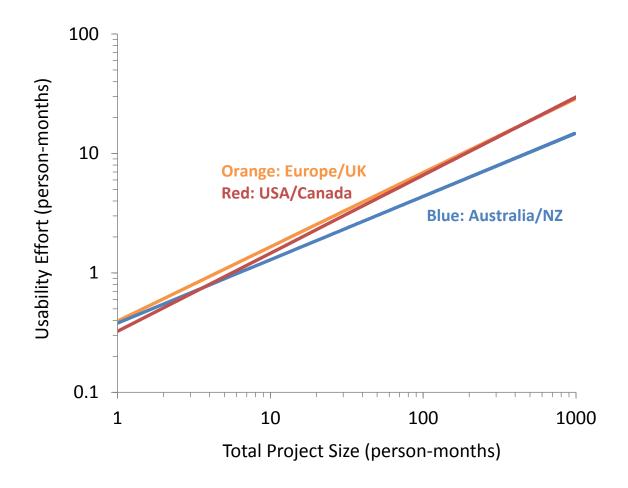
There is a small uncertainty in making this comparison, because the survey had to be anonymous to generate a sufficient response rate. Thus we do not know for a fact that somebody who responded to the survey in, say, Australia was working on an Australian project. About 10% of the Sydney conference attendees came from New Zealand, so when we refer to "Australia," we really mean "Australia and New Zealand." Furthermore, a few attendees came from other countries.

The vast majority of attendees in New York and San Francisco came from North America, just as the vast majority of attendees in London came from the U.K. and other European countries. Thus, the responses collected at the event(s) in a certain location are highly representative for that location, even though a tiny percentage of responses may have come from people based in other parts of the world.

**Figure 2** shows the best-fit regression lines for the data collected in each of these three parts of the world. It is apparent that North America and Europe are highly similar; they are essentially identical within the uncertainties inherent in this type of survey.

Australia and New Zealand, on the other hand, show a small difference compared to North America and Europe. Big projects in Australia tend to have somewhat smaller usability budgets than similarly-sized projects in North America and Europe.

This difference may be caused by a small gap in maturity for large Australian companies. They may not be quite as evolved in terms of attention to usability as big companies in parts of the world that have a longer tradition for embedding usability within major projects.



**Figure 2.** Best-fit trend lines for three parts of the world: North America (mainly the United States), the U.K. and Europe, and Australia and New Zealand. For each of the three areas, the line indicates the size of the usability budget for projects of different scale. Note that both axes are logarithmic and denoted in person-months. (12 person-months equate to one person working for a year, two people working for half a year, and so on.)

# **EVOLUTION IN USABILITY BUDGETS**

In 1993, we conducted a similar survey of software projects for our book *Usability Engineering*. <sup>4</sup> At that time, the median usability budget was 6% of the total project.

The 1993 survey was similar to the 2001 and 2006 surveys, in that it collected responses from best-practice projects and did not include companies that had no usability efforts on their projects. Thus, the numbers from the three surveys are fairly comparable and indicate a big increase in the allocation of budget share to usability. There are two main reasons for this increase:

First, the 1993 survey mainly included responses from traditional software development projects. In contrast, since 2001, surveys mainly include responses

<sup>&</sup>lt;sup>4</sup> For more details about the 1993 survey, please see Jakob Nielsen: *Usability Engineering*, Morgan Kaufmann Publishers, San Francisco 1994, ISBN 0-12-518406-9. Web page for the book at <a href="http://www.useit.com/jakob/useengbook.html">http://www.useit.com/jakob/useengbook.html</a>

from Web design projects. The Web has increased the importance of usability — and thus apparently its budget — because of the reversal of the sequence of user experience and buying decision relative to traditional software.

For most software, the user has to make the purchase before he or she gets to experience the user interface. Thus, by the time the user discovers that the software is difficult to use, the vendor has already received the payment. This reduces the vendor's incentive to increase usability; instead, the emphasis in traditional software development was on increasing features, because they were used as checklist items in magazine reviews and were easier for users to assess before purchasing the software.

With websites, the sequence has been reversed: first the user goes to the homepage and assesses whether it's easy or difficult. If difficult, the user may leave right there and then. If the homepage succeeds in guiding the user into the website, the user experience still has to be easy and smooth in order for the user to continue and eventually find the product or other item that's being sought. If the user is successful at navigating the user interface, only then does he or she reach the point of possibly conducting business with the company behind the website. Thus, a site that's difficult to use will have no business. This equation is a powerful incentive for site owners to invest in usability.

The second reason for the increase in usability from 1993 to 2001 is simply the passage of time. Usability is still a new discipline that tends to grow over time.

A common scenario in many companies is that usability is introduced by a single project manager who champions usability on his or her project even though usability is not part of the general corporate culture or development practice. Because usability is so powerful and works virtually every time, this manager's projects tend to be successful and generate higher-quality designs than the other projects in the company. More important, the various members of the team gain first-hand experience with usability. They'll see how it leverages their skills, which will spur them on to greater achievement and higher-quality deliverables.

Over time, the pioneering manager and his or her team members tend to get promoted and reassigned across the company, thus spreading the usability message to additional projects. Eventually, most projects in the company will have managers with positive experience from usability in their earlier projects, and some of these managers will gradually achieve promotions to director, vice president, and ultimately CIO or CTO.

Thus, after some years with usability activities in a company, a big percentage of middle management will have personal, positive experience with usability and thus be motivated to allow a bigger allocations of their budgets to be used for usability than was the case in the early days, when a lonely first-level manager had to squeeze usability activities out of his or her slush fund. In many cases, companies with 10 or more years of experience with usability end up having high-level executives who are firm believers in usability, because of their personal experience with its quality benefits when they were first- and second-level managers.

This promotion of usability advocates through the management ranks takes time but is a steady and firm trend in the industry.

In 2002, IBM published its own survey<sup>5</sup> and found that the median allocation of project budgets to usability was 10%. Thus, the IBM survey resulted in the same finding as the main conclusion from our 2001 survey, even though its methodology was somewhat different.

For our 2006 survey, we again found 10% to be a reasonable recommendation, since that's the median budget allocation among the survey respondents.

In 2007, E-consultancy<sup>6</sup> (a market research firm based in the U.K.) surveyed 346 companies and found that the mean budget allocation for usability was 11.51% of overall website budgets. E-consultancy also surveyed 249 usability consulting firms which estimated that their client spent 9.84% of their website budgets on usability. Obviously, consultants rarely know their clients' complete budget details, so this second number is a less accurate estimate. Also, it only covers companies that outsource usability and not the companies that have established their own in-house expertise in usability, thus probably underestimating the overall usability expenditures across the economy. We will therefore use the 11.51% finding as the result of E-consultancy's 2007 survey.

Most respondents to the E-consultancy survey were based in the U.K., but based on our own data (see Figure 2), we have no reason to believe that their slightly higher finding is due to differences between countries. The main reason for the higher number is probably that they used the mean instead of the median as the way of computing the average. (Means tend to be skewed by a few very high numbers.)

Four different projects across the 2000s decade have found usability budget shares ranging from 10–13%. We feel safe in stating that the current recommendation is to allocate 10% of the budget to usability for a design and development project, possibly with a trend toward higher numbers.

#### **FUTURE TRENDS**

In our 1993 survey, we asked usability managers to state their ideal usability budget for each project. The median wished-for usability budget in 1993 was 10% of the total project budget. Because 10% has been our estimate of best practices since 2001, one might argue that ideal usability practices have been achieved, at least among the best-run companies. More realistically, though, the ideal is a moving target, as users' demands for easy systems increase.

The following table shows the budget allocations to usability at different points in time, according to the surveys discussed in the previous section, as well as a few other data sources:

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<sup>&</sup>lt;sup>5</sup> Karel Vredenburg, Ji-Ye Mao, Paul W. Smith, and Tom Carey: A survey of user-centered design practice. *Proceedings ACM CHI 2002 conference*, pp. 471–478.

<sup>&</sup>lt;sup>6</sup> E-consultancy: Usability & User Experience Survey Report 2007, www.e-consultancy.com

Year	Share of Project Budget for Usability	Source
1971	3%	Brian Shackel
1989	5%	Tony Wasserman
1994	6%	Jakob Nielsen, <i>Usability</i> <i>Engineering</i> book
2001	13%	NN/g, this report
2002	10%	IBM
2006	10%	NN/g, this report
2007	12%	E-consultancy

**Table 2.** Evolution over time in the average share of development projects allocated to usability activities.

In 2001, we recommended 10% budget share, even though the median outcome from our survey was 13% as indicated in the table. The reason for this disparity was that the 2001 survey was too dominated by small dot-com projects from the bubble rush.

Table 2 may seem to indicate that usability budgets have stabilized since 2001. All the big changes happened in the three decades before then. However, the 2001 median point is not really representative because of the predominance of bubble-time projects. As shown in Table 1, small projects have indeed not changed since 2001, but big projects have increased their usability budgets substantially. The real change from 2001 to 2006 is that there are now more big projects that do usability, and this drags down the overall averages.

We predict that investment in usability will increase further in the coming years for four reasons:

- **Competition.** Increased competition on the Internet will lead to increased requirements for usability: users will simply refuse to use any sites that are not as easy as the very best sites on the Web.
- **Return on Investment.** It will become more widely recognized that the return on investment from usability is much bigger than almost any other investments that can be made in Internet projects: we are nowhere near the point of diminishing returns, so sites that invest more in usability will become even easier to use and will sell even more.
- Changing Audience. As the Internet continues to grow, it will reach bigger audiences of less-sophisticated users. The early adopters were technically savvy; the late adopters will need dramatically improved usability or they will not be able to use the Web at all.
- Internationalization. The Web will also become increasingly multilingual, with a majority of users who do not speak English, leading to an increased

demand for international usability assessment, which tends to be the most expensive type of usability activity.

It is hard to estimate how far usability budgets can go before it becomes wasteful to spend more on usability. The only thing we can be sure of is that the percentage has to be smaller than 100% because there must be some resources left over to carry out the practical part of the project and make the usability recommendations happen. We are also convinced that the current recommendation of 10% for usability is much too low to make technology truly suited for human needs.

We think that it might be reasonable to spend as much as 50% of budgets on usability in the future, and possibly even more. With a 50% allocation, companies would spend half of their resources finding out what should be done (usability) and the other half of the resources on doing it (design and implementation).

# **Benefits of Usability**

The immediate benefit of usability is that the user interface becomes easier to use. So it's good for humanity, because ease of use makes people less frustrated and less intimidated by technology, but what's the benefit to the company that has to fund the work?

#### SOURCES OF GAINS FROM USABILITY

The return on investment from usability improvements is generated in different ways for various types of design projects, as discussed below.

**E-commerce sites** are the simplest case. The benefits can be measured in terms of increased sales that result when it's easier for customers to shop. Conversely, if an e-commerce site ever launches a redesign with lowered usability, it will see sales drop immediately, typically leading to a decision to roll back the change.

Similarly, many other types of websites have a clearly defined desired outcome, such as applying to a college or subscribing to a newsletter. For such sites, the change in the ratio of visitors to transactors serves the same role as the increase in sales for an e-commerce site and provides a simple quantification of the value of a design change.

Some forms of **content sites**, such as newspaper sites, get their value from the sheer number of users they can attract. For such sites, visitor counts or page views can provide a metric to assess whether usability has done its job, although not in so clear-cut a fashion as e-commerce. For example, a redesign that makes it easier for users to find what they want often results in a short-term drop in page views, because users do not need to see as many irrelevant pages on each visit. In the long term, such design changes may still have value because they often result in more loyal users who visit more often or who behave in more valuable ways.

Pure marketing sites are the hardest to assess, because they typically don't lead to any immediate result the way e-commerce or transaction-oriented sites do. If the site works well, users may think more highly of the company and be more likely to do business with it in the future, but the actual moment of closing the sale may be far removed from the time of the visit. The customer's purchase may take place in a completely different environment, such as a third-party retailer's website or physical store, and can be hard to trace back to the positive experience at the vendor's website. Estimates can be made from asking the customers, either at the point of purchase or during general customer satisfaction surveys, but people are notoriously unreliable as sources of information about what they did in the past or what influenced their purchase decisions. Customer satisfaction and other estimates of reputation and branding can be measured by traditional market research methods and provide a proxy metric for the value derived from improving site usability. The company would still need to have ways of estimating the monetary value of improved customer satisfaction before it could compute a true ROI score.

Turning to **intranets**, we again find that hard numbers are easier to come by. The value of usability for intranet designs comes from increased employee productivity: every time a user can perform a task faster with the intranet, the company saves the cost of that person's salary and overhead for the amount of time that was saved.

We recently conducted a series of usability tests for a wide range of intranets with the goal of deriving usability guidelines for intranet design. As a result of having measured employees performing the same tasks in many different companies, we could estimate the productivity impact of intranet usability. The total time required to perform the 18 common tasks we studied was 49 minutes for an intranet with low usability (the worst-scoring 25% of those we tested) and only 25 minutes for an intranet with good usability (the best-scoring 25% of those tested).

If we multiply the task time by the estimated number of times per year that an average employee performs each task, we arrive at an estimate of 43 hours per year spent performing the tasks on a low-usability intranet versus 25 hours per year spent performing the tasks on an intranet with high usability. Thus, a company would save 18 hours per year for each employee if it redesigned its intranet from low usability to high usability.

Multiply the saved hours by the number of employees and their average loaded salary, and the resulting cost savings are typically huge for any sizable company.

Traditional **software development** projects fall into two categories: software developed for a company's internal use and software developed for external customers.

Internal software is similar to an intranet, in that productivity improvements are the source of return on investment for usability. When the software is easier to learn, training budgets can be cut, and when the software is faster to use, productivity increases. Additionally, the cost of help desks and other support decreases when more users are capable of installing and operating the software on their own. (Savings on help desks can also be a factor for intranets and websites, to the extent that they offer support to users.)

Software developed for sale to external customers is typically a difficult case to handle in terms of gains from usability. The biggest gains may be had from the increased sales that supposedly follow from having a higher-quality product that better meets customers' needs. Unfortunately, the relationship between quality and sales is hard to prove in specific cases and almost impossible to measure. A secondary gain comes from the reduced cost of technical support when a product is easier to use and thus generates fewer mysterious problems for users to call about. Also, product reviews in newspapers and the trade press often include comments on ease of use, so more usable software often gets better reviews, with a resulting increase in sales. Finally, a reputation for poor usability can be an impediment to sales, as has recently been the case for many big enterprise software solutions.

**Hardware** – such as consumer electronics, information appliances, PCs, mainframes and servers – is quite similar to software in terms of usability ROI. Much or all of the user interface may be embodied in a physical object instead of being displayed on a monitor, but the methods used to evaluate the products' usability are quite traditional. Out-of-box studies tend to be more important for hardware than for software, but basically usability relates to the user experience and not to the implementation. So the cost of studying software and hardware is about the same, except that hardware mock-ups may be more expensive to produce than screen-based prototypes. The gains from hardware usability come from better product quality and reduced support costs, just as they do in the case of software. Some differences: In reviewing consumer electronics, the press tends to emphasize

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<sup>&</sup>lt;sup>7</sup> See <a href="http://www.nngroup.com/reports/intranet/guidelines">http://www.nngroup.com/reports/intranet/guidelines</a> for the full report.

usability more than it does in reviews of software, so usability may have a higher impact on sales for those products. Also, people tend to not use gadgets that are too difficult, which doesn't hurt initial sales but does hurt repeat sales as well as the long-term reputation of the product. In the case of enterprise hardware, such as servers, the total cost of ownership is becoming an important decision parameter for IT departments, so usability can increase sales if the sales force can be taught to articulate the product's usability advantages.

## ESTIMATING THE MAGNITUDE OF GAINS FROM USABLE DESIGN

Across two rounds of surveys, we collected a variety of usability metrics from 57 design projects that had released two different versions of their site and had collected equivalent measurement data from both versions. Details of these 57 projects are given in the case study sections later in this report.

For the purpose of estimating usability gains, we needed design projects that could provide the same metric for two versions. Comparing the "before" number with the "after" number allows us to compute the ratio between the two, and thus the percentage by which usability was improved in the redesign. In contrast, projects that have metrics for only a single version do not have a way of assessing whether their numbers are good or bad. What does it mean that a certain task takes 3 minutes or that another task takes 8 minutes? It could simply be the case that the first task was easy and the second task was difficult. But if we know that the same task used to take 8 minutes and now takes 3 minutes, we can calculate the improvement in user productivity.

Theoretically, of course, a redesign can result in reduced usability. Not all new design ideas are good, even if they come from user testing and other research. But we can guarantee that projects can never be hurt by reduced usability metrics if they bother collecting these metrics. If a redesign scores worse than the original design, then it should not be launched (or if launched, should be rolled back). Thus, the worst that can happen is that the product results in zero gains and that the entire investment was wasted. That's tough, of course, but not nearly the disaster that might occur when inflicting a bad, untested redesign on customers, resulting in an ongoing decline in ROI.

In fact, one of the case studies we reviewed recorded a negative usability metric: the redesigned version was worse than the previous design. In our analyses we have scored this project as having a zero percent gain, because it is possible to avoid the loss – either by discovering the problem prior to launch through early user testing, or simply by rolling back the design after the metrics were collected.

Some of the 57 case studies resulted in more than one metric because of the characteristics of the project. Each of the metrics is described in more detail in the case studies section of the report. In total, we have 72 pairs of before–after measures, and thus 72 estimates of the usability gains from improved design.

#### **COMPUTING IMPROVEMENT SCORES**

Gains were computed from the ratios between the two measures: each redesign's "before" and "after" results.

Some metrics are "bad" in that higher scores indicate lower usability. Time on task is a typical example, because slower performance indicates poorer productivity. For this kind of metric, the ratio was calculated as the "before" score divided by the "after" score. If, for example, a task took 3 minutes to perform with the old design and 2

minutes to perform with the new design, then the ratio would be 3/2 = 1.5, for a productivity gain of 50%.

A two-minute task time is 50% more productive than a three-minute task time, because the faster design allows users to perform 50% more work in a given amount of time. For example, it's possible to perform 30 two-minute tasks in an hour, which is 50% more than the 20 three-minute tasks that would be the workload performed in the same hour with the slower design.

Other metrics are "good" in that higher scores indicate better usability. Conversion rates are a typical example, because you want as many visitors as possible to buy your products. For this kind of metric, the ratio was calculated as the "after" score divided by the "before" score. For example, assume that an e-commerce site recorded a conversion rate of 2% of visitors before the redesign and increased this to 5% after the redesign. In this case, the ratio would be 5/2 = 2.5, for an improvement of 150% in the conversion metric.

In general, the improvement score is the ratio minus one. Thus, if the before and after measures were identical, then the ratio would be 1.0 and the improvement would be 0%.

In terms of the mathematical ratio of the "after" score to the "before" score, 3 of our 72 comparative metrics recorded an infinite improvement. In these cases, the "before" score was a straight zero, meaning that no users performed the desired action. Compared with zero, any new number is infinitely bigger. For the sake of the analysis, we have coded these infinite scores as a ratio of 10 (1000%), corresponding to an improvement of 900%. Thus, instead of going from zero to, say, 10, we effectively count these projects as having gone from 1 to 10.

Of the 69 comparative metrics that did not have a "before" score of zero, 5 still had a ratio of 10 or more. Thus, ratios of at least 10 occurred naturally in 7% of the cases, which makes us believe that it is not excessive to code infinite improvements as a ratio of 10.

Thus, in total, 8 of the 72 comparative metrics have been coded with ratios of 10 or more, corresponding to usability improvements of 900% or more. Of the 8 highest scores recorded, 5 were 900%+ improved and 3 were infinitely improved.

# **EXPECTED USABILITY IMPROVEMENTS**

Averaged across all 72 metrics in our case studies, usability increased by 160% in the redesigned user interfaces. This average was computed from the geometric mean of the ratios, as were the other results discussed in this section. Geometric means are better than the more common arithmetic means when one is considering ratios instead of raw measurements.<sup>8</sup>

<sup>&</sup>lt;sup>8</sup> The geometric mean of N numbers is computed by multiplying the values and taking the N'th root of the resulting product. For example, for the three numbers 0.25, 2, and 4, the product is 2 and the cubic root is 1.3, which is the geometric mean of these three values. In contrast, the arithmetic mean would be (0.25+2+4)/3 = 2.1. Thus, the arithmetic mean places more weight on the big numbers (4 in the example) and less weight on small numbers (0.25 in the example). When one is dealing with ratios, the geometric mean is the more appropriate estimate of averages: in the example, the value of 0.25 represents a ratio of 1:4, which is the same magnitude (though inverse) as that represented by the value 4 (which is the ratio 4:1). Thus, the values 0.25 and 4 should get the same weight, which is exactly what happens in the geometric mean.

Thus, our main conclusion is that usability metrics can be expected to increase by 160% when launching a redesigned website based on a good usability process. Note that this increase means that the new design was almost three times better than the old design (strictly speaking, it would be 2.6 times better because 2.6 is 160% more than 1.0, which is the baseline score we always assigned to the old design).

As noted in the previous section, 8 of the 72 metrics recorded ratios of 10 or more, corresponding to improvements of 900% or more. These huge gains are common enough that we don't think they should be considered outliers and removed from the analysis. Of course, most projects are not going to score a "ten-bagger" (a tenfold increase) but it does happen from time to time. Thus, we maintain that 160% is our best estimate of the expected improvement in usability metrics from a redesign that emphasized usability.

On the other hand, some people may say that the huge improvements are the exceptional case and ask what one might expect in the more normal case.

If we remove the eight samples with huge gains from the analysis, the average of the remaining cases comes to 109% — a conservative estimate of the most common result. Even this conservative estimate indicates a more-than-double improvement in the quality of user experience.

If you include the small chance of striking gold with the redesign, the estimated improvement in usability is 160%.

The following bar chart (Figure 3) shows all of the improvement scores. Note that the y-axis has been cut off at 500%. The projects with the very highest scores should have had taller bars, but that would have made it harder to visualize the shape of the curve for the majority of projects.

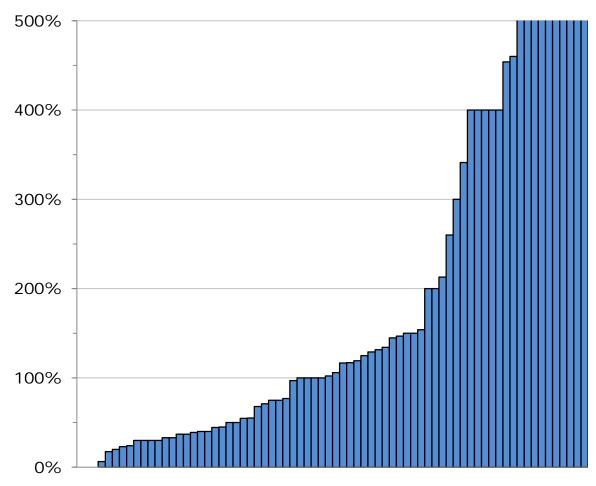


Figure 3. Improvements in usability metrics gained from redesigning for usability. Each of the 72 bars represents one before—after comparison from one of the case studies discussed in this report. The left-most part of the chart has three "invisible" bars representing the three cases with zero improvement.

Averaged across the intranets profiled in the Intranet Design Annual for 2001, use increased by 98% after redesigns that emphasized usability. Across the winners of the Intranet Design Annual from 2006 to 2008, traffic only increased by 79% on average.

In our cross-company testing of intranet usability, <sup>10</sup> we found that employees would spend 43 hours per year performing tasks with intranets that scored in the lower end of the ones we tested, whereas they would only spend 25 hours on the same tasks with intranets that scored among the better ones. The productivity gains are thus estimated at 72%, if an intranet can improve its usability from poor to good.

The intranet case studies yielded slightly lower estimates than the public website case studies in the present report. Probably because employees use the same

<sup>&</sup>lt;sup>9</sup> Please see the intranet design annuals, which present case studies of the 10 intranets we judge to have the best usability each year. http://www.nngroup.com/reports/intranet/design

<sup>&</sup>lt;sup>10</sup> This study is also discussed above in the section on the sources of gains from usability.

intranet all the time, they learn many of its quirks and thus can partially cope with some of its usability problems.

Our most general conclusion is that redesign for usability can be expected to result in slightly less than doubling the value of the desired metrics. If redesigning a public website, one might get a little more; if redesigning an intranet, somewhat less.

# COMPARISON WITH USABILITY METRICS FROM TRADITIONAL DEVELOPMENT PROJECTS

The case studies described in this report and represented in the above bar chart of usability improvements were all Web design projects. It is interesting to compare the usability scores from Web projects with similar scores from traditional development projects in the computer industry.

In 1994, we collected usability metrics from a large number of pre-Web case studies, where two different versions of a design had been measured for usability. <sup>11</sup> Most of these case studies related to traditional software development, although some related to the design of computer hardware products.

Of these pre-Web case studies, 46 measured error rates for the two versions of their designs. In the case of user errors, usability relates to the avoidance of errors, and improvements are scored by dividing user errors with the old design by user errors with the new design. For example, if people used to make eight errors while writing a memo in the previous version of a word processor but they make only four errors when writing a memo with the new version. This change would count as 100% improvement in usability because the new design is twice as good as the old one in terms of helping users avoid errors. Similarly, if the new word processor had been so good that people made only two errors, it would have been scored as having improved by 300% because it was four times better at helping users avoid errors.

Averaged across the 46 case studies, the decrease in user error rate was 83% (computed from the geometric mean).

The following chart (Figure 4) shows the improvements in error-related usability for each of the 46 pre-Web case studies. Note that three cases involved improvements of more than 500%, so the three right-most bars should be taller.

<sup>&</sup>lt;sup>11</sup> Full details of this study were published in the following paper: Jakob Nielsen and Jonathan Levy: "Measuring usability — preference vs. performance." *Communications of the ACM* vol. **37**, no. 4 (April 1994), pp. 66–75.

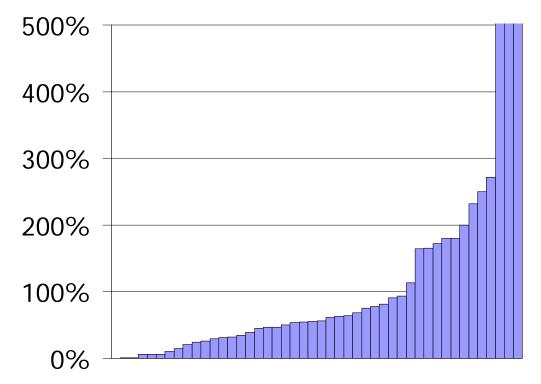
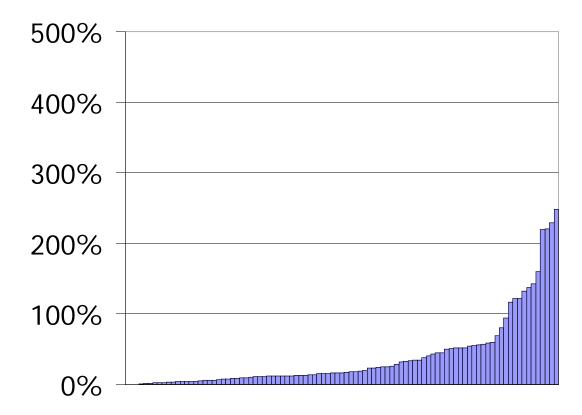


Figure 4. Improvements in error rate usability metrics from pre-Web redesign projects. Each of the 46 bars represents one before—after comparison from one of the case studies. The left-most bar represents a case with zero improvement.

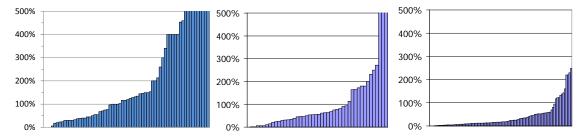
Our collection of pre-Web usability metrics also included 95 case studies that provided measures of performance-oriented usability metrics for before and after versions of their design. Typically, these metrics recorded how quickly users performed a representative task with the computer system being measured. On average (again using the geometric mean) user performance increased by 32%.

The following bar chart (Figure 5) shows the performance improvements for each of the 95 pre-Web case studies.



**Figure 5.** Improvements in performance-oriented usability metrics from pre-Web redesign projects. Each of the 95 bars represents one before–after comparison from one of the case studies. The three left-most bars represent cases with zero improvement.

Compare the shape of the chart in Figure 3 (mainly representing Web usability) with the shape of the charts in Figures 4 and 5 (representing pre-Web usability). The Web usability metrics show the greatest similarity to the error-related pre-Web metrics and less similarity to the pre-Web performance metrics.



**Figure 6.** Compare from left to right: Web usability improvement, pre-Web error-rate improvement, pre-Web time-on-task performance improvement.

Comparing the average improvement scores from the three sets of case studies also emphasizes that Web usability is more closely related to error avoidance than to the speed of user actions:

## CASE STUDY USABILITY IMPROVEMENT SCORES

Type of Case Study	Average Improvement
Web usability (eliminating outliers)	109%
Pre-Web error rate measures	83%
Pre-Web performance measures	32%

Web usability resembles pre-Web error-avoidance usability because most Web interfaces are used infrequently by any one user. People often move from website to website and spend most of their time on sites *other* than the one you are designing. Users rarely revisit the same pages so frequently that they become experts in the content of a specific page. On the contrary, most of the time a user visits a Web page, it's the first time that user has seen that page.

Most of the usability problems on the Web are grounded in users' inability to navigate correctly or their mistakes in interpreting information. People click the wrong link, they don't see the right link, they don't understand the instructions, they misinterpret how to deal with a form, or they get tripped up by any of the countless mistakes in Web design that have been documented in user testing of websites and the guidelines that have been published from this research.

In conclusion, Web usability is mainly a matter of user errors and how to avoid them. The speed with which users can complete an operation is typically of less importance.

Of course, this conclusion doesn't mean that user performance is irrelevant for Web usability. As we move toward fielding more Internet-based applications, skilled-user behavior may become more of an issue in Web usability, but for now, the initial user experience dominates Web usability.

In intranet usability, employee productivity is the greatest generator of return on investment. Because each company has only one intranet, users tend to learn many aspects of the intranet over time, but they still rarely reach skilled-user performance levels with most parts of the intranet. Productivity, in terms of how quickly employees can find the information they need on the intranet, is dictated primarily by how easy and approachable the intranet is.

## CATEGORIES OF WEB USABILITY METRICS

Besides looking at overall improvements in Web usability, it is interesting to consider the expected improvements for various classes of important metrics.

The usability metrics can be grouped into the following four main categories. For each class, we state the average improvement across the case studies, ignoring the eight outliers that recorded huge or infinite scores.

## MAIN CLASSES OF USABILITY METRICS

Metric Class	Average Improvement Across Web Projects
Sales / conversion rate (20 cases)	87%
Traffic / visitor count (14 cases)	91%
User performance (15 cases)	112%
Feature use (14 cases)	174%

Because the outliers have been removed from the analyses, the numbers in the table should be compared with the estimate of 114% in general usability improvements.

As shown by these numbers, sales and conversion rates are unfortunately the metrics with the smallest improvement, even though they are arguably the most important in terms of return on investment. That said, increasing sales or conversion rates by 87% is nothing to be ashamed of.

The estimate of 87% sales growth can be compared with data from our research study of the usability of 20 e-commerce sites. 12

In this study the average success rate was 56% when users attempted to shop on the sites. Assuming that the websites in the study would fix their usability so that people were capable of buying every time they wanted to do so, sales would increase by 79%. This increase is calculated as follows: for every 100 shoppers in the study, 56 were successful and 44 failed. Thus the sites' own sales statistics would record 56 sales. Hypothetically closing all 100 sales after a redesign would lead to a ratio of 100/56 = 1.79 between the two sales measures, for an increase of 79% in sales.

The two estimates of sales growth are fairly similar: 87% increase observed across the case studies in the present report and 79% potential increase if the sites studied in our other report fixed their usability problems. Both estimates support a general first conclusion that the expected outcome of improving e-commerce usability is a bit less than double sales.

A second conclusion comes from an analysis of the likely reason for the difference between the two estimates. The bigger number (87% growth) was empirically observed as the actual increase in sales across the case studies. The smaller number (79%) is the sales growth that would result if shoppers could buy every time they desired to do so; but users' desires are not constant, which explains the difference. If a site is easier to use, people are motivated to buy more than if it's difficult and unpleasant. On a site with low usability, people buy only stuff they absolutely need. On a site with high usability, users feel more welcome and are motivated to return for repeat purchases. Given the choice between shopping on two sites that both carry the same product at the same price, people are more likely to place the order on the site that's easier to use.

Traffic metrics, such as page views and number of visitors, improved by an average of 91%. It makes sense that it's easier to entice users to make more use of a website than it is to make them part with their money.

<sup>&</sup>lt;sup>12</sup> This research is documented in our report *E-Commerce User Experience*, which also includes design guidelines to increase the usability of product-oriented websites. http://www.nngroup.com/reports/ecommerce

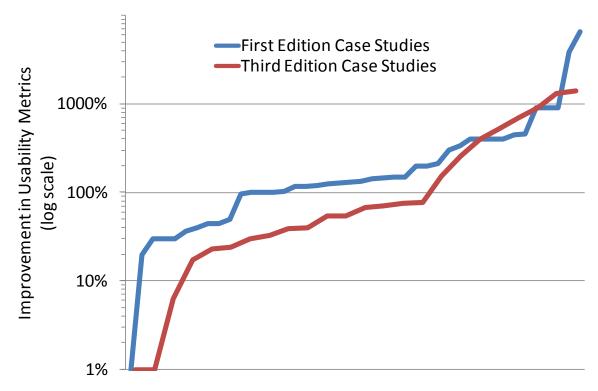
User performance metrics, such as time on task, improved by a surprisingly high average of 112% across the Web projects we studied. Our main explanation for this big improvement is that most current websites are so clunky that the baseline scores represented a particularly low level of performance. In contrast to the Web, most other forms of technology are sufficiently mature that the worst impediments to user performance are long gone.

Finally, the improvements in getting people to use individual features on websites were impressively high at 174%. In other words, if a website has a feature that the company particularly wants to promote, it is possible on average to triple usage. This big gain is understandable because it is a more localized usability challenge to increase feature use. If a good feature is being used too little, a reason can usually be discovered through user testing, and it is possible to test several alternative solutions within a limited redesign budget.

#### CHANGE IN ROI METRICS OVER TIME

As mentioned, we collected the 57 case studies through three surveys: 34 case studies were collected six years ago for the first edition of this report, 19 case studies were collected for the third edition, and 4 new case studies were collected for the fourth edition of the report.

Six years is enough that we might expect to see some difference in the improvement metrics across the first two surveys. As indeed we did. The following chart compares the distribution of the results from the first two surveys. The different case studies are arranged across the horizontal axis (sorted by increasing metric improvements), and the percentage improvement recorded for each case study is on the vertical axis. (Because the four case studies collected for the fourth edition are not enough to identify reliable trends, they are excluded from this comparison.)



**Figure 7.** Distribution of the improvements recorded in the usability metrics collected for the first edition of this report (six years ago, blue line) and the third edition (current data, red line).

Note the use of a logarithmic scale, which is necessary to depict the huge improvements in some of the case studies. (Cases with zero improvement are plotted as having had a 1% improvement, because the number 0 cannot be shown on a logarithmic scale.)

The red curve is pretty consistently below the blue curve, except for a short stretch in the upper range. This means that the usability improvements were mainly smaller for the newer case studies than for the old ones, but that there were a few cases with equally huge improvements in both surveys.

According to a t-test, the probability that the difference between the two datasets is due to random fluctuations (as opposed to representing a real difference) is p=8%. (This analysis was done after excluding the outliers with improvements of 900% or more, corresponding to a ratio between the before and after metrics of 10 or more.)

In most studies we want p to be less than 5% before we accept that there is a significant difference between two datasets. But 8% is close enough to 5% that we conclude that the difference is marginally significant.

In other words, most likely the expected improvement from redesigning for usability is now smaller than it was six years ago. However, the difference is not big.

Because the two distributions are so similar, the analyses we presented earlier in this report are based on pooling the results from the two surveys.

However, because there is a marginal difference between the two distributions, we can also analyze them separately.

Excluding the outliers, the average improvement in usability metrics was as follows:

Edition of This Report	Average Improvement From Redesign
First	135%
Third	83%

Why is the expected improvement from usability smaller than it used to be? Two reasons:

- We have now harvested most of the low-hanging fruit from the truly horrible websites that dominated the "lost decade" of Web usability (approximately 1993–2003). In these early years, Web design was truly abominable—think splash screens, search that couldn't find anything, bloated graphics everywhere. The only good thing about these early designs was that they were so bad that it was easy for usability people to be heroes: just run the smallest study and you would inevitably find several immense opportunities for improvement.
- Usability budgets have not increased substantially, even as the Web has gotten better. As we saw earlier in this report, the share of project resources allocated to usability has held steady at around 10% for the last decade in those enlightened companies that include usability in their design lifecycle. Yes, many more companies do usability now than ever before, but individual projects don't get much more funding, even though they are now faced with the harder problem of identifying the next level of design improvements.

Ten years ago, at the height of the dot-com bubble, a common conversion rate was 1%. Now 2% is a common conversion rate. So across the Web, this — the #1 usability metric — has indeed doubled in a decade.

Can we double again? Can we take expected conversion rates to 4%? Most likely yes, since we already see some sites achieving this level (much as some well-designed e-commerce sites were getting 2% conversion rates and better back in 2000.)

Once we reach 4%, can we double *again*? Probably yes. It should be feasible to reach the state where 8% is an expected conversion rate for a well-designed site, with the very-best sites getting a bit more. Going from 2% to 4% to 8% may take another decade for each doubling.

It's doubtful that average conversion rates will go much beyond 10%, for the simple reason that Internet users like to compare multiple sites before they buy. Also, many users are simply researching possible purchases or have a general interest in something without being anywhere near the point where they're actually shopping to buy.

Further improvements in website profitability will have to come from something other than conversion rates: most likely from improving the loyalty rate, which is the degree to which an already-converted user returns to the site to do business again and again.

The formula for website success is:

$$\mathbf{B} = \mathbf{V} \times \mathbf{C} \times \mathbf{L}$$

where

- **B** = amount of business done by the site
- **V** = unique visitors coming to the site
- **C** = conversion rate (the percentage of visitors who become customers)
- L = loyalty rate (the degree to which customers return to conduct repeat business)

Of course, there are further variables to consider, such as the size of the shopping cart and the marginal profitability of the products that sell the most. But roughly speaking, the success of a website is derived from multiplying these three numbers together.

In a multiplication, if you want to increase the outcome by a certain percentage, you can increase any of the factors by that percentage; it doesn't matter which factor is increased, the result will be the same.

Thus, to double a site's business, you can double the number of unique visitors, which would be very expensive and require you to more than double the advertising budget. (We need to more than double advertising spend to achieve twice the result under the assumption that we are already advertising under the most-promising keywords, so that we need to buy traffic from less-promising or more-expensive sources.)

Alternatively, you could double the conversion rate and achieve the same business improvement as you would from doubling the unique visitor count. We are still at the stage where it's fairly cheap to double conversion rates, though it's not as cheap as it was in, say, 2000. Spending 10% of the development budget on usability should improve the conversion rate by 83%, so you can probably double the conversion rate by spending less than 15% of your development budget. In most places, 15% of the development budget is far, far cheaper than having to more than double the advertising budget.

However, as conversion rates double—and later double again—we will eventually reach the point where the usability investment for continued improvements becomes much more expensive than current budgets. We will need to discover ever-more esoteric ways of satisfying customers, and these findings are not going to be obvious from the cheap and fast approaches to user testing that dominate today.

Eventually we will reach the point where it will be necessary to increase the loyalty rate to achieve substantial improvements in website business metrics. Whereas the period 2000–2010 could be said to be the conversion decade for website usability professionals, the period 2010–2020 will be the loyalty decade.

Sadly, researching loyalty issues and testing design ideas for improving loyalty require more expensive usability methods than those that helped us shave impediments to user conversion off from the user-hostile sites of the past. For example, field research will be a definite requirement to supplement lab-based testing. Even simple user testing must go much deeper than current user research to achieve the needed understanding of the next generation of user needs.

As the expected improvement percentages decline and the required usability budgets increase, what's going to happen to ROI? By definition, the return on investment relates to two numbers: the return (i.e., the improvement) and the investment (i.e., the budget). As both become less favorable, ROI must invariably decline.

Luckily usability ROI is currently so dramatically big that it can be reduced by an order of magnitude or more and still remain a favorable proposition for business executives. Eventually, of course, we'll reach the point where further investments in usability have lower ROI than other ways of spending the company's money, but that point is probably 20–30 years into the future.

# Case Studies of Usability Metrics from Real Design Projects

The remainder of this report presents case studies of usability metrics from the three surveys we conducted: one for the first edition of this report, one for the third edition, and one for the fourth edition.

#### HOW CASE STUDIES WERE COLLECTED

Some of the case studies were collected from the literature or our personal contacts, but most came from calls for case studies that were posted on Jakob Nielsen's email newsletter, *The Alertbox*, and the website www.useit.com. Case studies were solicited in three rounds: for the first edition of this report (six years ago), for the third edition, and again for the fourth edition. (The second edition did not include any new metrics case studies; only updates to other sections of the report.)

Considering how widely the call was read, it is remarkable how relatively few metrics we were able to collect. Apparently, the vast majority of projects either don't collect usability metrics at all or are unwilling to share them with the public, even when promised anonymity.

Of course, many companies may have collected metrics for a single version of a design which would be useless for our purposes. In order to estimate the degree of improvement that follows from designing for usability, we need two sets of metrics: before and after the redesign. For any individual project's own purposes, it may be enough to measure something once. For example, it's valuable for your project to know that your conversion rate is 2% or that users can complete a key task in 2.1 minutes. But such stand-alone measures don't allow us to assess the value of a change, only the value of the particular design that was measured. Thus, they are less useful outside the project in question.

## **ANONYMOUS CASE STUDIES**

Some of the case studies are anonymous, typically because they represent big companies that don't want details of their Web operations to become public. These companies still graciously shared their internal information with us in return for being promised anonymity in the report. We know the contributors and we thank them, even though they have to remain nameless here.

There are also many cases where the exact numbers for certain metrics needed to be kept out of the report. Many companies were not willing to have their sales data or other sensitive information published, even though they were willing to share it with us in private.

Because we are looking at only relative improvements in this report, the underlying numbers can be kept out of print and still allow us to publish the improvement scores as the ratio between two numbers that are in our spreadsheet but not in the report.

If we want the best and most interesting case studies, like the projects profiled here, we must respect anonymity and confidentiality requests.

# **Case Studies by Metrics Category**

The case studies that follow are from 57 different redesign projects. Some projects are represented with multiple types of metrics, making for a total of 72 redesign metrics.

The various case studies are grouped according to what was measured in the returnon-investment calculation. The examples vary in quantity and qualities, from allencompassing, site-wide redesigns to more-local feature changes.

Some case studies appear in several metric categories. In order not to create redundancies, the full case study is described only once, and any subsequent metrics then include a reference to this description.

In each section the case studies are sorted according to the improvement ratio. The case studies with the least change are first, and those with the most change are last.

Most of the metrics fall into the following categories:

Sales and conversion rates: 22 case studies

Traffic and visitor numbers: 14 case studies

Feature use: 18 case studies

User performance: 17 case studies

We also have one case study in which the return on investment came from a reduction in the development time needed for a project.

The number of case studies in each section doesn't necessarily reflect the relative importance of each type of metric — simply what was available when we collected case studies.

In particular, reductions in development time can often be one of the greatest benefits of usability, especially if seen over the full life-cycle of a design. Getting it right the first time saves tremendous costs in eliminating re-work. It is typically about 100 times more expensive to make a design change after launch instead of making the change while the project is still in the early prototyping stage.

Still, it is probably good that we have the most case studies in the categories of sales & conversion rates and user performance. These two categories are ultimately the most important: for any commercial website, the ultimate question is whether people buy — not how much or how often they visit (although loyal users are often loyal customers as well). And for any intranet design or mission-critical application, the users' performance is what determines productivity and the main value of the project.

# Metrics Category: Sales and Conversion Rates

#### **ANONYMOUS TECHNOLOGY VENDOR**

Product Software
Metric Conversions
Before 0.30%
After 0.26%
Ratio 87%
Improvement -13%

# **Background**

A longstanding company in the Internet field used its website to sell network components for software developers. The company's website sells its wares online with a fairly standard set of e-commerce features, including comparison charts and trial downloads. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

#### Problems / Goals

The company set out to reposition its site. There were two components — a graphic design overhaul and changes to the URLs.

#### Solutions

The original version of the site had an abundance of navigational options, including multiple navigation bars (both horizontal and vertical) on the inside pages.

A cluttered home page held more than 35 potential clicks which were not strongly organized along thematic lines. An inside page contained more than 80 clicks, with similar organizational issues.

The redesigned site still featured large numbers of clicks, but the design was much more strongly organized, both from a visual standpoint and an information architecture perspective. The overall look of the site was generally more polished and professional.

## **ROI** Measurements

Despite what seem to be improvements in the general structure of the site, a number of problems plagued the redesign. Chief among them, the URLs were changed, resulting in a sharp drop in traffic.

Even worse, conversions of unique visitors to unique downloads declined from 5.4% to 4.5% for the four months prior to the redesign compared to the four months after. Conversion of unique visitors to sales also declined — from 0.30% to 0.26% for the same period.

Conversions of trial downloads to sales did increase by 14.5%, but it wasn't clear that the latter improvement could be attributed to the website design.

The redesign did reduce the number of clicks to a purchase and made the labeling of navigational items clearer, but the fact that visitor conversions declined makes it difficult to draw a clear conclusion about the ROI value of these metrics.

#### SIMPLY BUSINESS

Product Financial Services

Metric Request for quote/conversion

Before Not disclosed After Not disclosed

Ratio 118% Improvement 18%

# **Background**

Simply Business is a division of Xbridge Limited, a U.K.-based online broker of financial and insurance services. The site offers visitors a tool for requesting competitive quotes on all types of insurance, business financing, mortgages and credit cards. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

#### Problems / Goals

The site's home page offers immediate access to a tool for requesting quotes for the site's various business services. The goal of the redesign was to move more visitors from entry to a completed request for a quote — the first and necessary step in converting visitors to a sale. With a six-step Request-For-Quote (RFQ) process, designers felt it was imperative to target the landing page in order to highlight relevance for specific kinds of visitors and manage expectations about how long the RFQ takes to complete.

#### Solutions

Instead of a single entry page (the home page), entry pages were designed for different types of insurance and financing (such as small business, auto or mortgage). Traffic was driven to the pages using pay-per-click advertising.

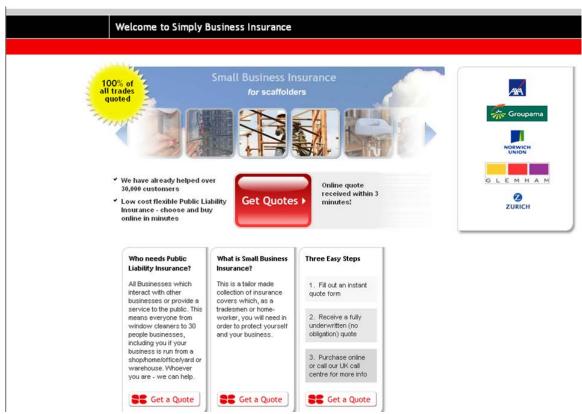
Several versions of the landing page were tested. The final page featured the site's standardized navigation bar, a list outlining what specific types of visitors would benefit from filling out the RFQ, a short description of the product being quoted and a short description of how the RFQ process works. The page also features multiple, repetitive call-to-action links.

# **ROI** Measurements

A final design has not yet been implemented, but during testing, the design team found that a landing page targeted to the specific type of product resulted in an 17.5% increase in conversion of clicks to RFQs, compared to the original design which presented a general form and a dropdown to select the specific product before requesting a quote.

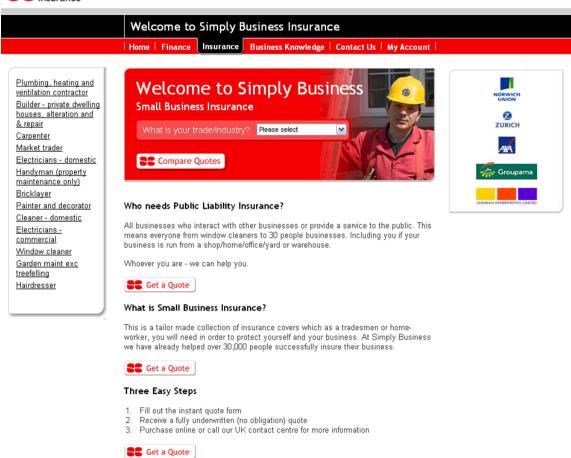
The team also tested two extremely similar targeted landing pages, where the major difference was the presence or absence of a navigational bar pointing toward other products. Removing the navigation bar foreclosed click options and increased RFQ clickthrough by 18%.

In another test, three calls to action were displayed on the landing page. One version of the page featured three vertical boxes of text and another used three horizontal boxes. Horizontal outperformed vertical by 6%. But a page with a large RFQ button that simply eliminated the extra text altogether improved on the vertical design by 15%.



After: The horizontal boxes of text with calls to action outperformed the vertical version.





After: The vertical list of calls to action did not perform as well as the horizontal version shown previously.



After: Providing a single call to action (instead of three different text boxes) led to the most conversions.

### **BUZZFOX**

Product Page

Metric Sales

Before Confidential After Confidential

Ratio 100% Improvement 0%

#### Background

Buzzfox is an e-commerce website selling software that mimics electric guitar pedal effects. The product presented here is called the Big Muff and is one of the most popular products on Buzzfox's website. *This case study was included in the report in the 1<sup>st</sup> edition.* 

# Problems/Goal

Simplify shopping process and increase revenue. More specifically, when users arrive at the Big Muff product page, the focus is the large Flash movie in the middle of the page. If the user is loading a product page on Buzzfox for the first time, this area displays an informative (and unornamented) "Loading" screen as it caches about 100k of Flash movies. Subsequent Flash movies on product pages load a file that is about 10k, so further browsing on the site is very fast. The user has to scroll to get the entire Flash movie onto the screen, and they have to scroll even farther to see the price and "Add to Basket" button.

The design team wanted to change the site to achieve two aims: make it easier to view the Flash movies while making it easier to shop as well.

# **Solutions**

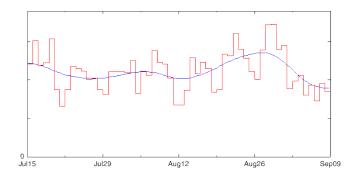
In the redesign, the design team at Buzzfox removed the Flash movie from the actual product page (where it filled a large portion of the screen above the "Add to Basket" button) and instead linked to it on a separate page that contained the Flash movie and nothing else.

Scrolling is no longer required to reach the "Add to Basket" button at most popular screen resolutions.

#### **ROI** Measurements

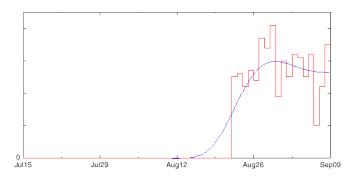
Buzzfox's page views per customer did not change, nor has their revenue changed. Site visitors are interested in getting to the sounds and hearing the products; the increased access to the product demonstrations has (so far) not increased the shopping.

# TRAFFIC TO THE SITE'S HOMEPAGE



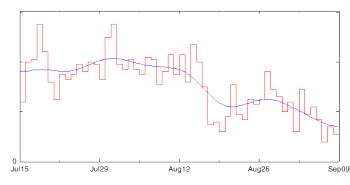
The change to the site was made on August 22nd. This graph provides a reference point for the other traffic graphs.

# TRAFFIC TO THE NEW BIG MUFF FLASH PAGE



The traffic to the new Flash movie (only) page immediately gained a traffic level approaching that of the old product page (which had both product and movie).

# TRAFFIC TO THE BIG MUFF PRODUCT PAGE



The traffic to the page dropped on the weekend before the change was implemented and then established a lower "normal" level with the new design. The combined page views for this page and the Flash movie page are very similar to those for the Big Muff product page before the change.

Apparently, many people appreciated the new feature of being able to jump directly to the Flash movie from parent pages, such as the Electro–Harmonix page. If anything, this fact has proven the popularity of the Flash product demos. The usability of the product pages before the change may not have been a significant impediment to shopping. More data over a longer period would be required to make an accurate judgment about the effect on sales.





<u>Buzzfox</u>

<< More Info available

Sound Quality

 Best Sound C Fastest Loading

Show popup help





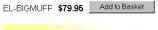
# Big Muff Pi USA

Related Pages Electro-Harmonix Distortion, Overdrive, and Fuzz

The Big Muff is the tonal bargain of distortion guitar pedals. It may take a while to find your sound, but it's in there if you look for it. The Sustain control is subtle compared to the Tone, and mainly changes how lazy the transitions sound. The Muff we're selling is the latest version from Electro-Harmonix: it's made in the USA and has a neat shiny metal look.



The flash demo was incorporated in the product page, so all users had to wait for its download.



Sound Problems? - What will Listen to it do? - Get Flash 5 - Email Us - Privacy Policy

The contents of this site, including all images, text, sounds and Flash software are @ 2000, 2001 by Buzzfox Inc.

#### **Before**



Search







# Big Muff Pi USA

Related Pages Electro-Harmonix Distortion, Overdrive and Fuzz

The Big Muff is the tonal bargain of distortion guitar pedals. It may take a while to find your sound, but it's in there if you look for it. The Sustain control is subtle compared to the Tone, and mainly changes how lazy the transitions sound. The Muff we're selling is the latest version from Electro-Harmonix: it's made in the USA and has a neat shiny metal look.



#### Reviews and Info

Manufacturer's Site Harmony Central

**Power Supply Options** Hard wired: **No**AC Adapter: **Yes** Battery: Included

Availability: Usually ships within 24 hours.

EL-BIGMUFF \$79.95 Add to Basket

Sound Problems? - What will Listen to it do? - Get Flash 5 - Email Us - Privacy Policy

The contents of this site, including all images, text, sounds and Flash software are @ 2000, 2001 by Buzzfox Inc.

#### After

The Flash movie was replaced with a narrow table with links to the Flash product demo, deep links to pages about the Big Muff at external sites, and additional info about its power supply options.

# **DYNAMIC GRAPHICS (CREATAS)**

Product Creatas Website
Metric Average weekly sales

Before Confidential After Confidential

Ratio 120% Improvement 20%

# **Background**

In the spring of 2001, Vialogix, a Charlotte, NC-based web design firm, was hired by Dynamic Graphics to assist in launching an entirely new brand within the highly competitive stock photography marketplace. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

Dynamic Graphics wanted to establish a new brand — Creatas — within the graphic design community and create a best-of-breed, royalty-free, stock photography shopping experience. Some of project goals included increasing Web sales, attracting new customers, increasing the conversion rate of visitors to buyers, and shortening the sales and purchase cycle (the time from when a prospect first visits the site until he or she completes the purchase).

## **Solutions**

The design team developed a persistent tool palette at the top of every page to handle common functions such as Search, Cart, and Account Info. This tool palette was reminiscent of the palette metaphor employed in several popular graphic software products used by nearly everyone in the target audience.

## **ROI** Measurement

Average weekly sales in 2002 have increased more than 20% compared with the same period in 2001. Overall sales are up more than 35% since the launch of the new site.



Before: The previous Dynamic Graphics website landing page did not have a clear focus on searching for and purchasing stock photography.



After: The new "Creatas" website was clearly focused on the task of finding stock photography and led to a substantial increase in sales.

#### **EUROSTAR (ETRE)**

Product Travel Services

Metric Online sales

Before £110 million/year

After £136 million/year

Ratio 124% Improvement 24%

# **Background**

Eurostar is the high-speed train service that connects the United Kingdom with mainland Europe and has been named "World's Leading Rail Service" at the World Travel Awards every year since 1998. Its website, Eurostar.com, allows users to book trains, accommodation and rental cars, and to obtain information about every aspect of the travel experience, from purchasing tickets to boarding trains to sightseeing at the destinations the company serves. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

#### Problems / Goals

In September 2005, Eurostar commissioned user experience specialists Etre (www.etre.com) to help redevelop its global web presence. The main objectives being to make significant improvements to the usability and information architectures of the company's family of websites (spread across several different countries and languages); to introduce a host of new travel booking features; to incorporate a new global brand identity; and to provide a market-leading online experience for its customers — all within a six-month time frame.

To achieve these aims, Etre delivered an iterative user-centered design program comprising three usability tests — the first of which identified more than 100 usability issues present on Eurostar.com. Using this information as an input, Eurostar's design team developed wireframes, process flows and subsequently a barebones HTML design prototype, which was subjected to a second round of testing. This time, 70 usability issues were identified. The designers used this feedback to create a new "hi-fidelity" prototype, featuring near-final visual designs and HTML. This prototype also underwent testing. Findings and recommendations arising from this third study were then used to create the final version of the website's design. Also incorporated was feedback from several other user-experience-related activities including card sorting and user surveys (which aimed to address IA and labeling

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<sup>&</sup>lt;sup>13</sup> A simple count of usability issues found in user testing is an interesting metric that is easy to implement. However, caution is advised if using this metric during a recommended UCD (user-centered design) process where you start with testing paper prototypes, wireframes, or other simplified versions of the design. While prototype testing is great for finding fundamental problems early, it does mean that you are restricted to testing a subset of the full system's functionality. Thus, you may not discover quite as many usability problems. Also, testing wireframes before applying the graphic design is great for identifying issues with the interaction design, but obviously won't include the count of usability issues with the graphics. There are two solutions to this dilemma: First, you may restrict the use of usability problems as a metric to cases where you are testing a fully-implemented system. Second, instead of comparing the full count of usability problems, you can compare the count of issues related to those elements of the design that were included in both tests.

issues); and usability inspections (which were used to evaluate areas of the site that could not be included in the user testing due to project time constraints).

#### **Solutions**

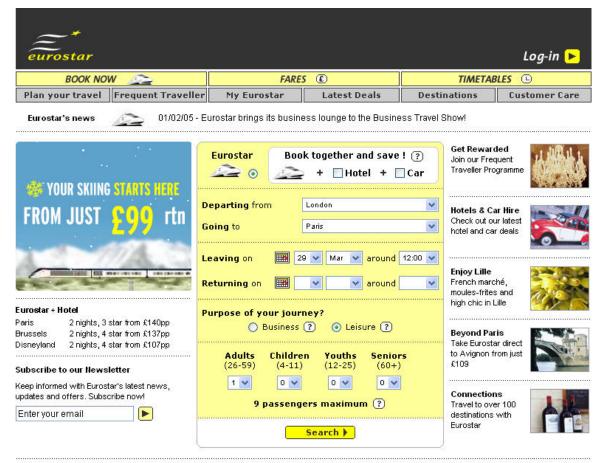
The new design sought to address several specific design issues identified during the aforementioned user experience activities:

- Error messages. Unspecific and unhelpful error messages were to blame for the majority of problems that users experienced during the testing of Eurostar's old website. For instance, when desired train fares were unavailable, the site failed to recommend alternative choices, leaving users at a dead-end. And when users' sessions timed out, error messages began stacking on top of each other, eventually disabling the browser's Back button and requiring them to close the browser window and start over. Unfortunately, a number of technical issues have prevented Eurostar from addressing these problems as thoroughly as it would have liked. However, the team firmly believes that the improvements made to date are the main driver of the subsequent ROI improvements.
- Confusing language. Product names and acronyms that were fairly transparent in one language were completely opaque in another. Other labels were simply confusing or inconsistent, and the site sometimes changed language unpredictably as users were navigating it. Card sorting helped identify structural issues, while nomenclature surveys helped identify issues with the terminology used to describe products, services and navigational elements.
- Confirmation pages. In the old site, confirmation pages failed to inform users that they had successfully completed processes like account registration. These pages were subsequently redesigned to eliminate confusion.
- User accounts. The old website let users create two different types of account—a standard website account and a frequent traveler account. Both were managed and maintained in separate areas of the site and required users to complete different registration processes. This "branching" created much confusion and, during testing, contributed to a failure rate of nearly 70% among users who attempted to register to use the site. The two account types were merged into a single account (i.e., a standard website account that could be extended to encompass frequent traveler functionality as needed) which reduced the complexity of the overall site significantly.
- HTML issues. The old version of Eurostar.com was plagued by technical issues. Indeed, a serious level of degradation was evident when using the site with any browser/operating system other than Internet Explorer on a PC. For example, completing various booking transactions in browsers like Firefox, Safari and Opera was nearly always problematic and sometimes even impossible in the majority of cases, client-side page interactions were erratic and the overall design aesthetic was significantly compromised. The redesign thus focused on redeveloping the site in

accordance with W3C and related web standards. Given the number of pages and the overall complexity of the underlying system infrastructure, meeting this requirement is taking some time. The improvements made to date however, have enabled the site to reach a large number of users who, until recently, had limited (or no) means of purchasing Eurostar's products and services. Eurostar is therefore committed to continuing the good work completed so far, and has made standards compliance and accessibility a high priority.

#### **ROI** Measurements

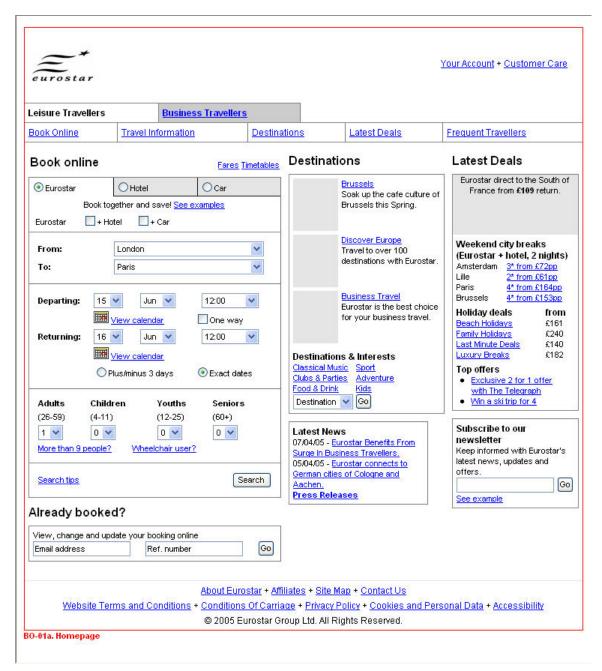
While it's difficult to separate the impact of a user-centered design program from the other activities that go with the re-launching of a website (in particular, the marketing drive that follows thereafter), in the 12 months since Eurostar's redesigned site went live, online revenues grew from £110 million to £136 million (an increase of 24%, or £26 million). The number of online sales increased accordingly by 19.5% – and while online sales accounted for 23.7% of Eurostar's total sales in 2005 (i.e. sales from all channels including online, offline and third-party travel agents), this proportion increased to 25.9% in 2006. E-mail and call volumes fell by about a third during the same period, reflecting a shift of activity from those channels to the website, with attendant cost savings. The number of unique visitors also increased by 24.3%.



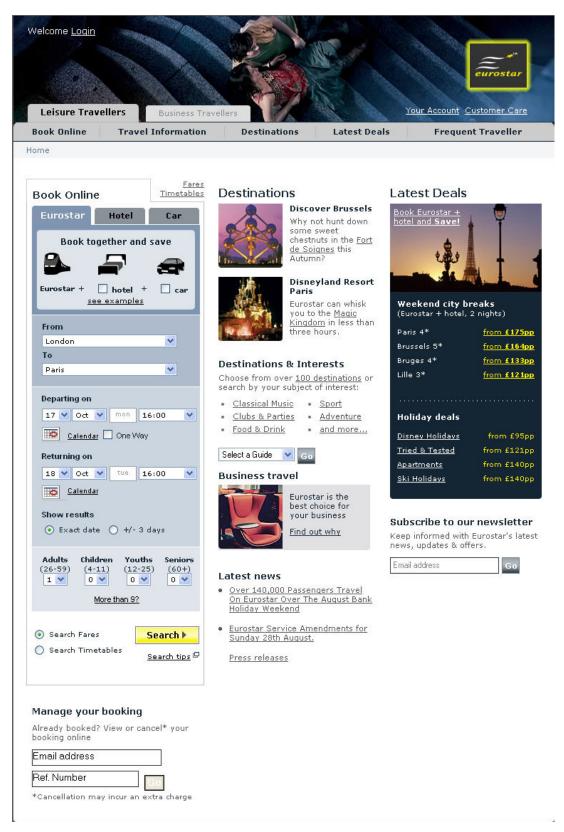
Business Home | Book How | Fares | Timetables | Plan Your Travel | Frequent Traveller | My Eurostar | Latest Deals
Destinations | Customer Care | About Eurostar | Affiliates | Site Map | Contact us

Website Terms and Conditions | Privacy Policy | Conditions Of Carriage | Cookies Policy | @ 2005 Eurostar Group Ltd. All rights reserved.

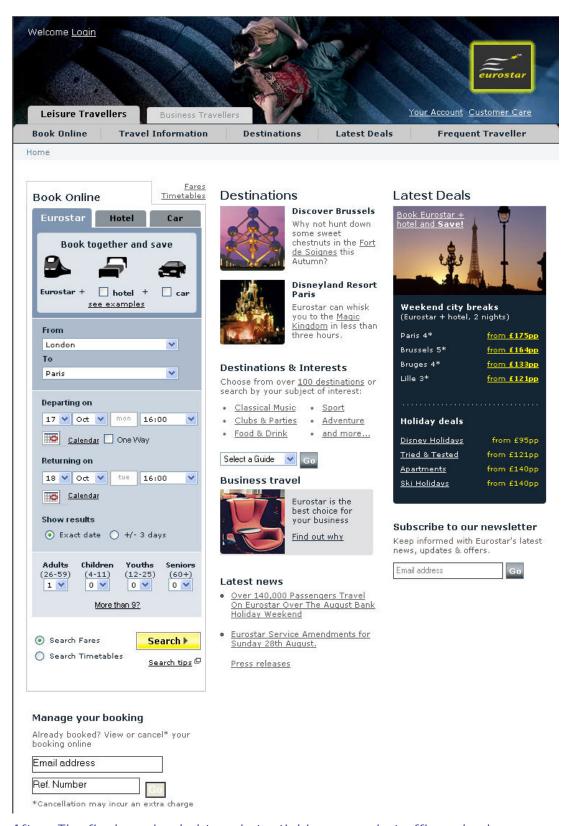
Before: The previous design had more than 100 usability issues, including confusing language, multiple types of user accounts, and problems with browser compatibility.



The low-fidelity prototype addressed many of the usability issues with the original design, but testing still revealed 70 usability problems.



The designers incorporated feedback from the low-fidelity testing into this hi-fidelity prototype, which included near-final visual design.



After: The final version led to substantial increases in traffic and sales.

# PERFORMANCE BIKES (37 SIGNALS)

Product Website Metric Sales

Before Confidential After Confidential

Ratio 130% Improvement 30%

# **Background**

Performance Bikes is the nation's number one bike catalog reseller. They hired 37 Signals to redesign their website. The new site was launched in early 2001. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

One of the biggest issues with the original shopping cart page was that virtually all the buttons were given equal prominence and emphasis — even when the related actions were far from equal. For example, the "Secure Checkout," "Wish List," "Non-Secure Checkout," and "Update Quantity" buttons were all orange, square, roughly the same size, and placed in close proximity to each other. The most important button on the page (Secure Checkout) was hidden among the other buttons that were less important. Furthermore, the "Empty Your Cart" button, which is rarely needed and can lead to great frustration if clicked accidentally, was the biggest and most graphically complex button on the page.

#### Solutions

The redesigned cart page reduced the number of buttons, changed specific buttons ("Remove" for example) into less intrusive text links, removed certain buttons altogether (Empty Your Cart), and used friendlier, easier to understand language and button labels to explain button actions ("Proceed to Checkout" instead of the morecryptic "Secure Checkout").

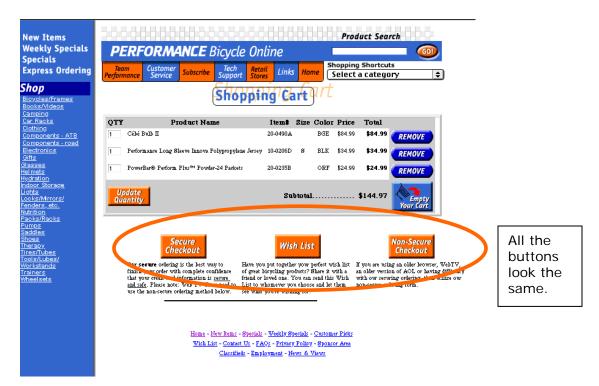
The design team also used green for the "Proceed to Checkout" button to set it apart from the other buttons on the page. In addition, they added a link from each product shown in the cart to its product page. The usability research in this case study has found that people often want to review the product they are buying before they move forward in the checkout process.

Finally, a colored background was added to the table cell to bring more attention to the subtotal.

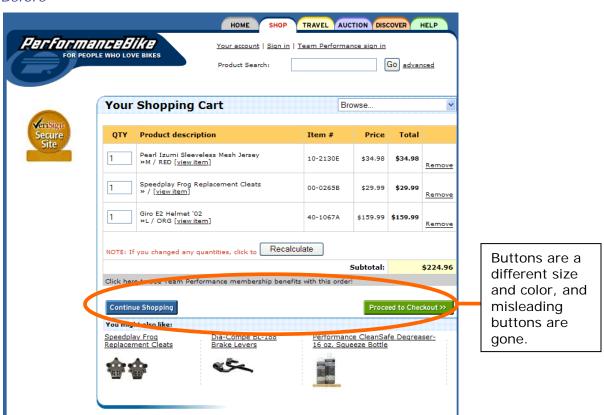
#### **ROI** Measurements

The redesign resulted in an increase of at least 30% in sales in the first quarter after the launch of the redesign. The length of the checkout process was reduced by about 40% by reducing the number of steps, which led to an increased conversion rate and a decrease in abandoned shopping carts.

The redesign also allowed easier expansion of the site without impacting the overall design (reducing long-term costs, because a major redesign wouldn't be required to add new areas).



# **Before**



After

# RICHARD SCOTT (INDEPENDENT ARTIST)

Product Homepage

Metric Increase in sales
Before Confidential
After Confidential

Ratio 130% Improvement 30%

# **Background**

Richard Scott is a South African artist who designs and runs his own online portfolio. This case study was included in the report in the 1<sup>st</sup> edition.

## Problems / Goals

An analysis of the server logs seemed to indicate that people were not interested in paging through all the paintings, one at time (each on different pages). They wanted to see multiple paintings in a single view.

## **Solutions**

Richard redesigned his homepage by simply redirecting users to the page showing thumbnails of all his artwork.

## **ROI** and Other Measurements

Richard Scott's sales from the website increased by 30%. Traffic increased by 20%. Fewer people clicked the news link and signed up for the newsletter, probably because users were more motivated to scroll down the page to view the thumbnails of the artwork.



Before: The website presented images one at a time.



After: The new site presented a gallery of thumbnail images which let users view several images at once.

# PACIFIC CUSTOM CABLE (INDEPENDENT COMMERCE)

Product Shopping Cart

Metric Sales

Before Confidential After Confidential

Ratio 137% Improvement 37%

# **Background**

Independent Commerce is an e-commerce solutions provider. Independent Commerce redesigned the shopping cart for Pacific Custom Cable (its parent company), a seller of computer cables and networking supplies. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

The third-party shopping cart system Pacific Custom Cable was using previously was sub-par; however they could not find any common-sense shopping carts with the features their customers wanted. They decided to design their own shopping cart experience and make these changes:

- 1) Make layout less cluttered.
- 2) Add site search.
- 3) Change the navigation links and their location.
- 4) Move the contact information (away from the top of the page).
- 5) Allow customers to place orders online and by email, fax and phone.
- 6) Show customers PCC's address to reassure them that the company is legitimate and trustworthy.

# **Solutions**

Independent Commerce created a pop-up shopping cart that allowed people to add items without taking shoppers out of the website context. If a customer's browser doesn't allow pop-ups, the shopping cart is created on a separate page.

- The shopping cart is not cluttered.
- The accepted currency is shown.
- A lock symbol inside the cart shows that it is a secure.
- The Independent Commerce logo inside the cart assures customers. They can also click on the logo to verify the SSL Secure Certificate.

# **ROI** Measurements

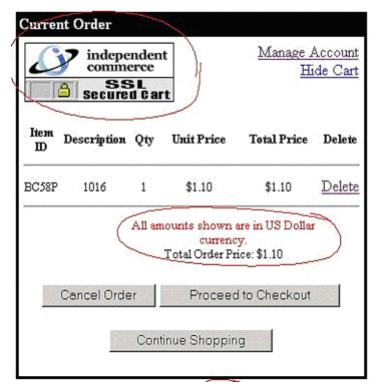
The redesigned shopping cart, in conjunction with the new website design, boosted PCC's monthly sales. The number of first-time orders and returning customers has risen significantly. Before these changes, PCC had mainly first-time customers who were referred by previous customers. Afterward, the number of people who found the website using search engines then bought things on their first visit also rose.



MULTI-FUNCTION LAN TESTER					
PART NUMBER	DESCRIPTION	PRICE	PICTURE & SPECS	TO ORDER	
EC3A	MULTI-FUNCTION LAN TESTER	\$85.00	<u>©</u>	Qty 1 ORDER	

You are here: PacificCable.com > Category 5 Menu > Multi-Function LAN Tester

Before: The third-party shopping cart solution was cluttered and did not allow customization of elements such as contact information and address.



After: The new custom-built pop-up shopping cart let users add items without taking them away from the page.

# **BROADMOOR (WEBVERTISING)**

Product Website

Metric Number of reservations made

Before Confidential After Confidential

Ratio 145% Improvement 45%

# **Background**

Located in Colorado Springs at the foot of the Rockies, The Broadmoor provides guests with the finest in accommodations and services in an environment of beauty and luxury on Cheyenne Lake, surrounded by mountains. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

Webvertising wanted to take Broadmoor's cumbersome reservation process, with its many screens and steps, and replace it with a more-streamlined and easier way for a customer to complete the reservation process. They created a hotel reservation form that consisted of a single page.

#### Solutions

The new Macromedia Flash interface allowed the guests to see changes to data reflected instantly on the screen, with one simple submission at the end of the transaction. This change reduced confusion and increased bookings.

#### **ROI** Measurements

- Most (75%) users chose the one-screen version over the HTML version.
- Reservations could be made in less than one minute instead of more than three minutes, because the process was streamlined. The number of screens in the online reservation process was reduced from five to one. Other online reservation applications typically have five to 10 screens.
- Reservations increased 45% annually.
- The Flash version's file size was 30% less than the HTML version and therefore faster to download.

# **Screenshots**







02 0 , 66 0 Rob Burgess In the old design users needed to go through 4 steps to complete the process.



After: The new design allows all the details to be entered on one page, in one step.

## **REAL TSP**

Product Checkout System
Metric Conversions
Before 1.83%
After 3.13%
Ratio 171%

71%

# **Background**

Improvement

Real TSP is an e-commerce outsourcing company that provides marketing, operations and technology support to businesses with an online component. Its transactional websites include a universal shopping cart deployed across multiple sites, including <a href="http://adams.co.uk">http://adams.co.uk</a>, <a href="http://atams.co.uk">http://atams.co.uk</a>, <a href="http://atams.co.uk">http://atams.co.uk</

## Problems / Goals

The company was re-implementing its backend checkout system and decided to integrate design changes to the frontend at the same time. The object was to make

a friendlier user experience that would, ultimately, increase conversions. Initial rollout was done on the sites for Adams Kids and mini mode, both sellers of children's clothing.

## **Solutions**

Several significant changes were implemented in the redesign.

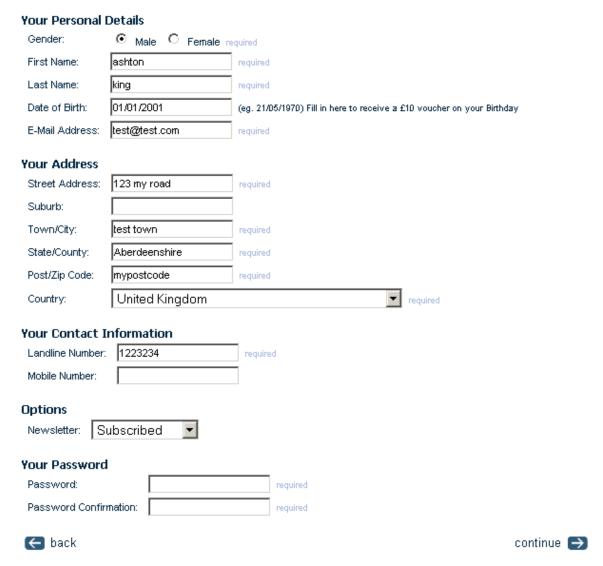
- The most extensive revisions took place inside the shopping cart at the point
  of checkout. The cart was streamlined; font sizes were enlarged and requests
  for information were broken into smaller bites. A compact, easy-to-use "my
  account" control panel tops off the redesigned shopping cart.
- Less information was requested from consumers as they prepare to purchase.
  Previously, the site required a birth date and customer gender. As seen in
  other case studies, asking for less information almost always increases user
  response. Other privacy-centered improvements included asking for
  confirmation before saving a customer's credit card details and providing
  better feedback when a customer needs help or has filled out a field
  incorrectly.
- The redesign also made it easier to get to the checkout, enlarging the size of the buy button relative to other options and adding one-click ordering for registered customers. As a result, once a size is selected, the customer can be as few as two clicks away from a completed purchase.

# **ROI** Measurements

The design changes to the product pages resulted in 57% more customers placing items in their shopping cart in the four weeks after the redesign, compared to the four weeks prior. Conversions averaged 71% higher.

The average number of visitor sessions increased 17% for the period, while returning visitors dropped by 9.5%. While new visitors may be responsible for a chunk of the increased conversions, the disproportionate increase in conversions strongly suggests that the design change provided a large boost by removing psychological barriers and reducing the number of clicks required to complete a purchase.

# My Account Info



Before: Customers had to enter a birth date and gender in order to complete a transaction.

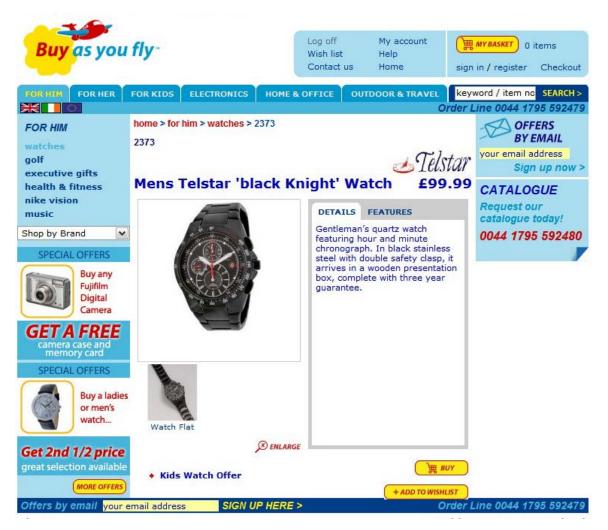
# My Account

■ Kids in my life

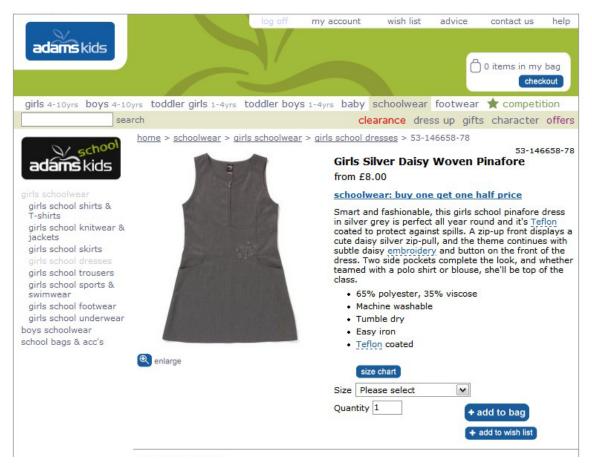
Please choose one of the options below...

# Orders My orders Return an item How much is delivery? How do I return an item? Redeeming vouchers Personal Manage my account details Manage my address book Manage my vouchers

After: This control panel appears at the top of the shopping cart, offering quick access to common tasks.



Before: The "buy" button is actually smaller than the button for a secondary action, "add to wishlist."



After: The "buy" button is enlarged relative to other buttons.

# **GAD.DK (SOLID CREATION)**

Product Online Bookstore
Metric Conversions
Before Confidential
After Confidential

Ratio (original to final) 175%
Improvement (original to final) 75%
Ratio (facelift) 145%
Improvement (facelift) 45%
Ratio (backend redesign) 121%
Improvement (backend) 21%
Improvement (backend) 21%

# **Background**

Gad is Denmark's largest chain of bookstores, and its online storefront, Gad.dk, holds a similarly commanding position. Solid Creation is a consultancy. This case study was included in the report in the  $3^{rd}$  edition.

#### Problems / Goals

The site was seen as needing a general overhaul. The revisions were done in two stages — a front-end facelift, followed by an extensive redesign with new backend capabilities. The goal was to improve the overall user experience and boost sales.

# Solutions

During the first phase, the site received a largely cosmetic re-tune that put a gloss on the same basic content.

- Menus were tweaked, the color scheme was changed, and a very large graphic logo was added. The result was a more polished and professional look.
- The front page was enlarged considerably, offering exponentially more clicks to interior destinations.
- Probably the most significant addition placed all linkable category pages in list form to the front, for easier product browsing. The original design required a click just to reach the category list and displayed only a handful of products, with hardly any content below the fold.

During the second phase, the page received a thorough overhaul. The object, in virtually every case, was to display more books as clickable links on each page.

<sup>&</sup>lt;sup>14</sup> It may seem odd that improvements of 45% in the first stage of the redesign and 21% in the second stage of the redesign add up to a total improvement of 75% (instead of 66%). This result is explained by the fact that the improvement ratios are multiplied together, not added together, when moving through the stages. In other words, the 21% improvement in the second stage is measured on top of the performance level of 145% that was achieved after the first stage. What's 21% of the first-stage numbers would have been 30% of the original numbers.

- The graphic heading was reduced substantially, and clickable elements (such as a banner) were integrated into the presentation. The header added during the facelift, while attractive, was heroically large and included a substantial dead area with no embedded clicks.
- The category list is again moved inside; instead the front page now showcases about 15 product displays (with book cover, price, blurb and buy button).
- New context-sensitive features are served on product pages, including search history, similar books, books by the same author, staff recommendations and more.
- Additional search-and-sort criteria were added, including price, date of publishing, target age, and others.

#### **ROI** Measurements

Conversions and sales increased substantially after both the initial facelift design and the complete overhaul. All comparisons are to the original design.

Metric	After facelift	After final redesign
Conversion rate	+ 45%	+ 75%
Total sales	+ 10%	+ 25%
Items placed in shopping cart	+ 30%	+ 60%
Sign-up for newsletters	+ 5%	+ 30%
Returning visitors	+ 10%	+ 40%
Average help desk calls (per week)	Reduced by 50%	Reduced by 80%

(The conversion rate is used as the metric in this section. The newsletter sign-ups are shown in the section on feature use, the visitor count is shown in the section on traffic, and the help desk calls are shown in the section on user performance.)



Before: This Danish bookseller wanted to give the website a general overhaul to improve it's appearance and increase sales.



After Facelift: Designers added a large image at the top of the homepage and added a list of all product categories in the lower left corner.



After Overhaul: The size of the graphic at the top was reduced and the list of all categories was removed in order to display more books on the page.



After: Product page, showing contextually featured links: the last three books the user has seen (left column), other books by the same author (below main product description), various top-10 lists of best-sellers and recommended books (right column).

## **OMNI HOTELS (SLINGSHOT)**

Product Website

Metric Conversion rate

 Before
 0.005

 After
 0.01

 Ratio
 200%

 Improvement
 100%

## Background

Omni Hotels is a privately owned company headquartered in Irving, Texas, operating 40 first-class and luxury hotels and resorts throughout the United States, Canada and Mexico. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goal

Omni's primary objective was to increase reservations through the website while reinforcing their brand position as the premier luxury overnight accommodation for the frequent business traveler.

- The page layout was too wide for most laptop monitors, forcing users to scroll left and right to see the navigation links. That it did not work well on laptops was especially problematic for a website that wants to attract business travelers.
- The primary navigation had too many links and "Reservations" became buried.
- Users couldn't see what each section offered without clicking. Most business travelers dialed in using 28.8k or 56k modems and didn't have the patience to download each page.
- Photos were too small and did not adequately convey the upscale nature of the brand.

#### Solutions

- The design team decided to use photography as a fundamental brand element, conveying the rich interior of the typical Omni property
- Reservation links were made available both in the primary navigation and as a hotel directory at the bottom of every page.
- Although meeting planners and travel agents used separate sections of the site accessed through the homepage, these links were not included in the primary navigation. Fewer links allowed the designers to increase the font size for navigation items.
- Secondary navigation was consolidated in rollovers for each primary link, eliminating clicks and page downloads.

## **ROI** Measurements

The site averaged about 3.3 pages per visit prior to the redesign; afterward it averaged 4.4, for an increase of more than 25%. Before the launch of the new site Omni received approximately one reservation for every 200 visitors. Afterward, conversion increased 100%, to about one reservation for every 100 visits. The increase in page views is not necessarily good in itself, since it could have been caused by a more difficult design where users couldn't find what they were looking for. In this case, however, the increase in number of sales leads us to believe that

the increased page views were associated with users performing more in-depth research on the hotels and being more motivated to use the site.



Before: The old design used several small images to portray different properties.



After: The new design emphasizes a large detailed image to convey the hotel's luxurious brand.

## **VESEY'S (SILVERORANGE)**

Product Website

Metric Sales during a 41-week period

Before Confidential After Confidential

Ratio 217% Improvement 117%

## **Background**

silverorange is a small team of web developers who produce user-focused web systems for their clients. Veseys, a popular seed company, approached them to redesign their e-commerce site last year. This online gardening store sells a huge range of seeds, tools, and other gardening merchandise. *This case study was included in the report in the 1<sup>st</sup> edition.* 

### Problems / Goals

- Vesey's old website was extremely slow all the time (some pages would never completely load) and, at times, completely down.
- The website was based on an off-the-shelf Web store system which was very limiting in terms of displaying custom product information or categories.
- The homepage did not provide much information about products.

#### Solutions

- The interface was improved, and the site was moved to faster and more reliable servers.
- The new website was built from scratch to incorporate the special needs of Vesey's product line.
- On the new homepage, the product categories are listed on the left and popular features, such as ordering a catalogue and special offers were all highlighted on the homepage.

## **ROI** Measurement

Comparing the final 41 weeks of 2001 (after the redesign), with the final 41 weeks of 2000 (the old site), Veseys' sales increased by 117%.

Comparing the first 11 weeks of 2002 (the redesigned site) with the first 11 weeks of 2001 (the old site) sales increased by 718%. (There were server problems in those weeks in 2001.)

A fairer comparison might be the first 11 weeks of 2002 (the redesigned site) compared to the first 11 weeks of 2000 (the old site), which showed a sales increase of 308%.



Before: In the old design, "Ordering" was just one of many options on the homepage.



After: The new homepage emphasizes the store as the main point of the website, listing product categories on the left and special offers in the center of the page.

#### **OPENTABLE.COM**

Product Website

Metric Number of reservations made

 Before
 12,142

 After
 26,621

 Ratio
 219%

 Improvement
 119%

# **Background**

OpenTable provides a computerized reservation system for restaurants that replaces the traditional pen-and-paper reservation book. The OpenTable website allows diners to scan for available tables and instantly confirm a reservation at any time of the day. All reservations — whether online or over the telephone — are entered into OpenTable's system. *This case study was included in the report in the 1<sup>st</sup> edition.* 

### Problems / Goals

- The previous interface was cluttered and confusing, especially the search page, arguably the most important page on OpenTable's website.
- The fact that OpenTable was expanding its restaurant coverage across the nation was hidden, as opposed to promoted, by the interface.
- The design was utilitarian in the extreme; there was no space for promotions or personalized features.

## **Solutions**

The many search interface usability improvements were highlights of the redesign. The tabbed interface allowed more room for promotions and targeted communications, and it's scalable, so there's room to grow in the future if needed.

The OpenTable design team eliminated the generic Arial font in favor of Verdana to add a bit of style without sacrificing page load time. In addition, the font size employed for content was reduced from 12 points to 10 points to increase screen real-estate.<sup>15</sup>

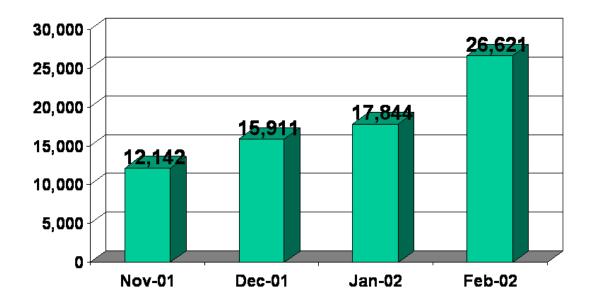
#### **ROI** and Other Measurements

The new design increased the number of searches by 20%.

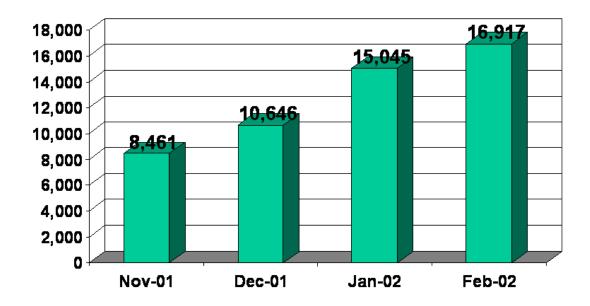
The number of saved reservations increased by 10%.

After the launch of the redesign in November 2001, OpenTable's average monthly reservations and registrations more than doubled.

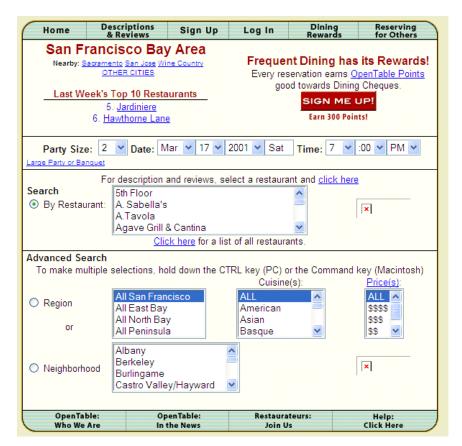
<sup>&</sup>lt;sup>15</sup> In general, we don't recommend smaller text as a solution to a potential problem of having too much text. Usually, it's better to edit the text to make it more concise. Ten points is an acceptable font size for most users, but 12 points is better for senior citizens. (For more information on designing for seniors, please see <a href="http://www.nngroup.com/reports/seniors">http://www.nngroup.com/reports/seniors</a> .)



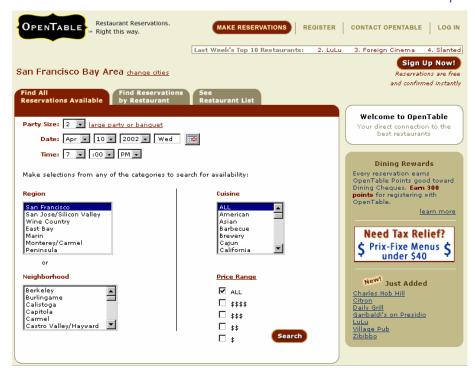
Reservation Growth: After the re-launch in November 2001, the number of reservations made through the site dramatically increased.



Registration Growth: The number of people who registered for an account also increased after the site was redesigned.



Before: The old site was cluttered and did not have room for special promotions.



After: The new site has a more modern look and feel, and promotes special deals as well as new restaurants that have joined the service.

### **EBAGS**

Product Website

Metric Conversion rate

Before 1
After 2.5
Ratio 250%
Improvement 150%

## **Background**

eBags is the world's largest online retailer of bags and accessories for all lifestyles. This case study was included in the report in the 1<sup>st</sup> edition.

## Problems / Goals

Like many e-commerce companies, eBags has had to tighten its belt and focus on profitability recently. The marketing department cut its PR budget and ceased all offline and much online advertising that cost money. <sup>16</sup>

They wanted to increase the website's traffic, build the prospect database and improve conversion rates — while spending less money.

#### **Solutions**

Out of all the site design tests, the most significant factor by far was page-load time. Conversion rates are 10%–20% better on faster pages. So, the team redesigned using a Yahoo-style homepage directory because it loaded much more quickly.

eBags reduced its shopping cart abandonment rate by 20% by tweaking each of the five pages in the purchasing process. The design emphasis was "Keep it simple. Show people exactly what they're buying, what they're saving, and where they are in the process." The ZIP Code entry box, which helped people find out when their purchases would arrive, cut down calls to customer service.

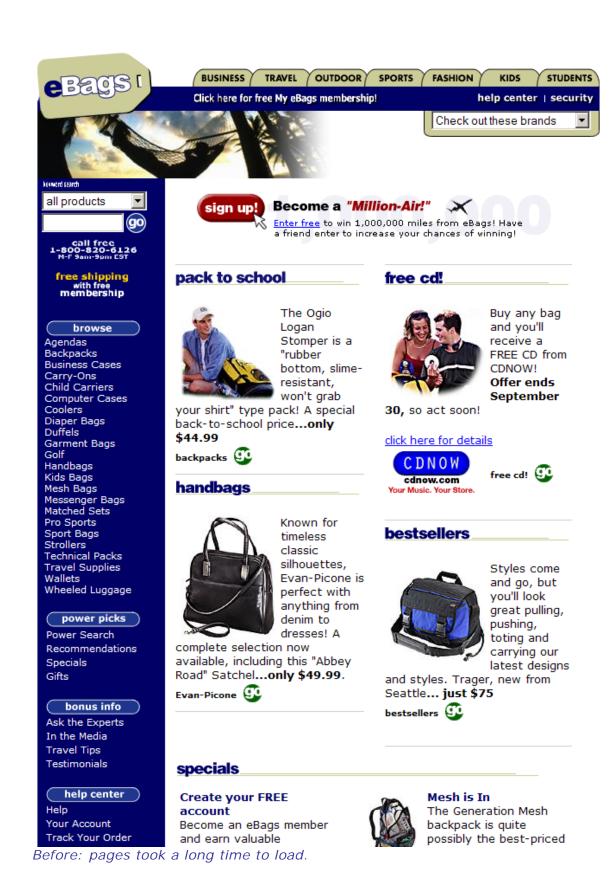
#### **ROI** Measurements

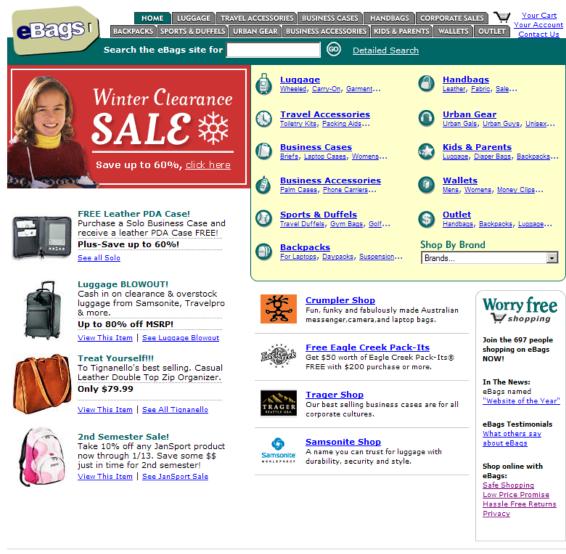
In 1998, when eBags was launched, the site's conversion rate (number of visitors who become buyers) was about 1%, which is considered pretty good for online retailers. After the redesign in 2001, eBags' conversion rate increased to an average of 2.5%-3%.

 $^{\rm 16}$  Case Study presented on Marketingsherpa.com, on May  $\rm 4^{\rm th}$  2001.

48105 WARM SPRINGS BLVD. FREMONT, CA 94539-7498 USA

INFO@NNGROUP.COM





Order by Phone: 1-800-820-6126 | 1,294,994 Bags Shipped Since 1999 | 100% Satisfaction Guaranteed

#### Where's My Bag? • Manage Your Account

• Check your Order Status

## Shipping & Returns

• See our Returns Policy

- See our Shipping Rates
- Help Center

## **Contact Us Anytime**

- Forget your password? • Email us at info@ebags.com
- Visit our Help Center
- Call Toll-Free 1-800-820-6126

After: The directory-style homepage loaded much more rapidly.

## MACY'S

**Product** Website

Metric Conversion rate Before Confidential Confidential After

Ratio 250% **Improvement** 150%

# **Background**

Based in San Francisco, Macys.com was launched in 1996 as a separate, self-standing subsidiary of Federated Direct Inc. 17

## Problems / Goals

When Macys.com was relaunched July 2001, Federated executives said that boosting the site's conversion rate was a key objective for the holiday season. *This case study was included in the report in the*  $1^{st}$  *edition.* 

#### Solutions

The revamp of Macys.com included more product "boutiques," more customer service options and an upgrade to Mercado Software's IntuiFind 4 search technology.

Rather than try to match shoppers' search requests against a text catalog of goods, IntuiFind 4 runs keywords through "linguistic module" software that corrects spelling mistakes or translates phonetically similar keywords to the terminology in the product database. The engine also normalizes the formatting of numbers and alphanumeric combinations.

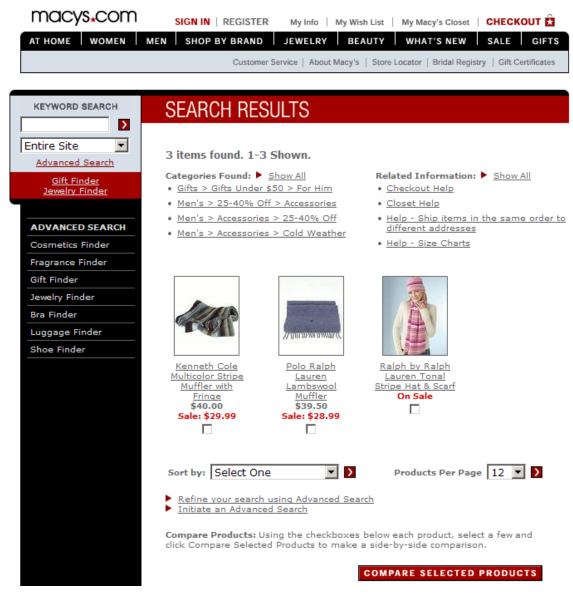
## **ROI** Measurements

Although Federated wouldn't disclose Macys.com's actual conversion rate, it said the rate increased 150% after the redesign.

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WWW.NNGROUP.COM

<sup>&</sup>lt;sup>17</sup> Case study presented in *Internet Week*, November 28, 2001.



Macys.com new search results — searching for "blue scarf" finds relevant products with names other than scarf.

## **NEW YORK LIFE**

Product Website Metric Sales

Before Confidential After Confidential

Ratio 313% Improvement 213%

# **Summary of Case Study**

NYL wanted to increase traffic to various product information. During the redesign they changed the location of product links and brought more content upfront.

Total sales leads per day increased by 213%. New York life increased additional metrics as well. For the full report about this case study see the description in the Sales and Conversion Rates metrics category. This case study was included in the report in the  $1^{st}$  edition.

#### **DISCUSS THIS**

Product Online Discussion
Metric Signups for trial
Before 2-3 per day (beta)
After 8-10 per day (beta)

Ratio 360% Improvement 260%

# **Background**

DiscussThis (<u>www.discussthis.com</u>) is a recently launched discussion group website by MailerMailer, which also provides e-mail marketing software. During its testing period, the site offered free trial signups. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

## Problems / Goals

Initially, signups averaged two to three per day (on relatively low traffic). The goal was to increase the conversion of visitors to signups.

#### Solutions

The original signup page asked visitors for a significant amount of information. It consisted of a very long form (about 1,100 pixels deep) asking for name, e-mail, password, mailing address and phone number. All of these fields were required in order to sign-up. On a second page, users were required to submit necessary information to use the service — the name, description and initial membership of the list.

The redesign implemented a two-page signup process — but one with a far more minimalist approach. The first page now requested only name, e-mail and password. The new form takes far less time and effort to complete. As other case studies show (see Microsoft Office Help, Page 161), even small reductions in the amount of effort asked from a user can dramatically improve response.

The new signup page is also far less intrusive on user privacy. A 2004 TNE-TRUSTe survey found 52% of respondents said websites ask for too much personal information when registering or making a purchase. The original form not only asked for but *required* an address and phone number. Since these items are functionally irrelevant to a free trial, users likely assumed they would be used for marketing. <sup>18</sup>

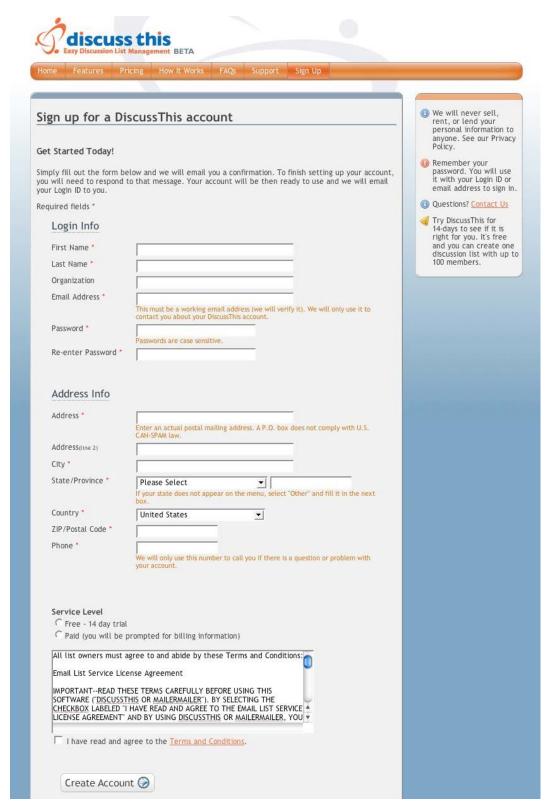
Not surprisingly, the change resulted in a sharp increase in signups.

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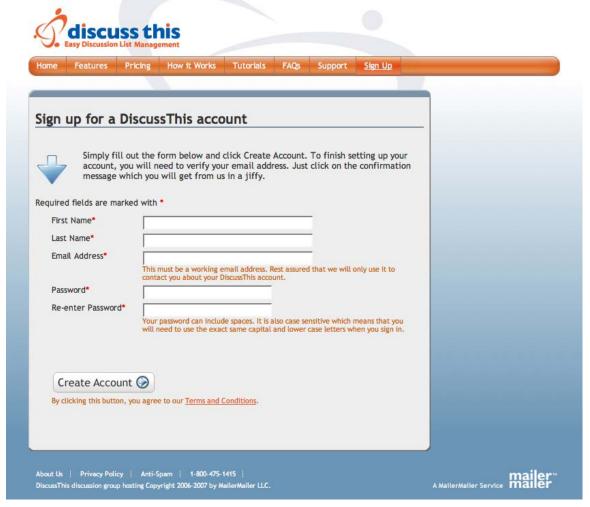
<sup>&</sup>lt;sup>18</sup> As shown on the screenshot of the "before" version, the form did include a brief summary of the privacy policy ("We will never sell ... your personal information to anyone.") Even better, at the exact spot the form asked for the user's phone number, a short message stated that nobody would call except for problems with the account. These design elements follow the usability guidelines for registration forms (see <a href="http://www.nngroup.com/reports/ecommerce/checkout.html">http://www.nngroup.com/reports/ecommerce/checkout.html</a>). Even so, users are extremely concerned about their privacy these days, and so the less information you ask about, the higher your conversion rate.

## **ROI** Measurements

Prior to the redesign, two to three users signed up per day. After the change, on roughly the same traffic, that number increased to eight to 10 on most days, and spiked as high as 20 on one occasion. While the test period statistics don't represent enough volume to be statistically significant (about 250 visitors a day for a conversion of about 1% compared to 3.6% after), there was a clear and consistent increase after the design change was implemented.



Before: The form asked for 6 pieces of personal information and had 18 forms elements plus one button.



After: the form now only asks for 3 pieces of personal information and has 5 forms elements plus one button.

#### ADC

Product Online ordering process

Metric Online sales, year-over-year

Before Online sales 2001: \$170,000 / Orders: 157 After Online sales 2002: \$750,000 / Orders: 704

Ratio 441% Improvement 341%

## **Background**

ADC is a large Telecommunications company that produced sales of \$2.4 billion in 2001. Because of shifts in the Telecommunications industry in 2002, ADC sought to develop new sales channels that would allow the company to service customers across all tiers more effectively, while producing overall cost savings. ADC.com was selected as a means of providing customers with the ability to purchase small, simple products that are often needed quickly. *This case study was included in the report in the 1st edition*.

#### Problems / Goals

Until 2002, ADC.com had been used primarily as a tool for distributing product and marketing information to customers. While e-commerce capabilities had been deployed, the online shopping user experience had not yet received the attention it required. For example, if you were not a direct ADC customer and did not yet have an online account with ADC, you were unable to make a purchase on the site. If you were a direct customer with an online account, there was a extensive series of purchasing screens to get through before being able to place an order. ADC needed a way to allow both direct and retail customers to purchase products online quickly and easily whether customers have registered or not.

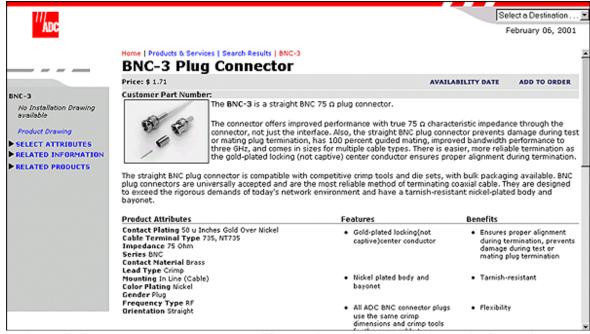
## Solution

In addition to a site-wide user experience and interface upgrade, ADC completely revamped their online purchasing experience. Now, you do not have to be a direct customer of ADC or be registered on ADC.com to make an online purchase; users can purchase instantly online using either a credit card or an approved purchase order, either at list price or at pre-contracted prices. Additionally, the purchasing process was reduced to four simple steps. ADC also added tools like "Request a Quote" and "Ask a Question" for users not quite ready to purchase. The company garnered over \$10M in online quote requests in 2002.

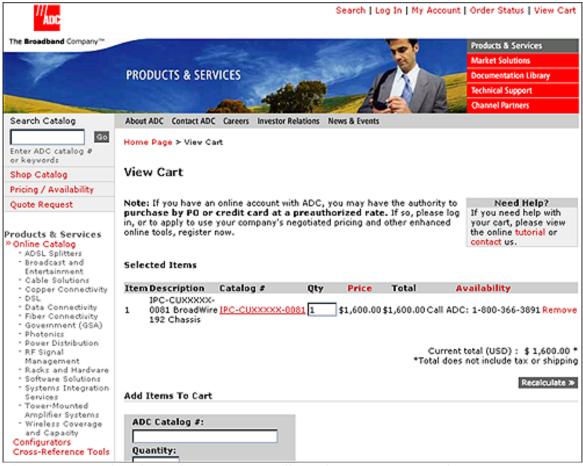
#### **ROI** Measurements

Sales increased by 348% in terms of number of orders processed by the site. The average amount for each order declined a tiny bit, so the revenues increased by only 341%. Given the choice between number of orders and revenue, we have chosen the growth in revenue as the most important ROI metric for this case study.

The online quote requests may be even more important in the long run, particularly for companies like ADC that sell relatively complex products. It is hard to estimate the true ROI from quote requests, however, because one would also have to account for conversion rates at subsequent stages of the sales process.



Before: Only existing customers could complete purchases through the website.



After: A streamlined purchase process allowed anyone to complete a transaction, whether or not that person was a previous customer.

### **IBM: BULLSEYE PROJECT**

Product Website Metric Sales

Before Confidential After Confidential

Ratio 500% Improvement 400%

## **Background**

The 1999 "Bullseye" site redesign, in which IBM initiated a massive enterprise-wide redesign of its (then) 3-million-page, 72-country website. This redesign effort forced organizational and operational changes across IBM's product divisions, sales and marketing organizations, and customer support centers. *This case study was included in the report in the 1st edition.* 

## Problems / Goals

There was a dysfunctional mix of disparate company websites, with more than 2 million pages separately owned and operated across the company (and more than 1000 IBM staffers involved in maintaining the company's overall ad hoc Web presence). Many of these divisional sites maintained their own separate design systems following minimal corporate design guidelines and shared no underlying information architecture.

The company knew it had a "broken" user experience, resulting in low customer satisfaction ratings, missed sales opportunities, and a high cost structure associated with maintaining multiple organizational Web "silos" for each division.

#### Solutions

The company decided to reengineer the design and architecture of ibm.com, unifying the many divisional websites into a single "One IBM" site design and architecture. Divisional Web teams, who had previously been responsible for managing their own websites from end to end, were recast as business requirements owners and content providers but were no longer directly responsible for design or information architecture decisions.

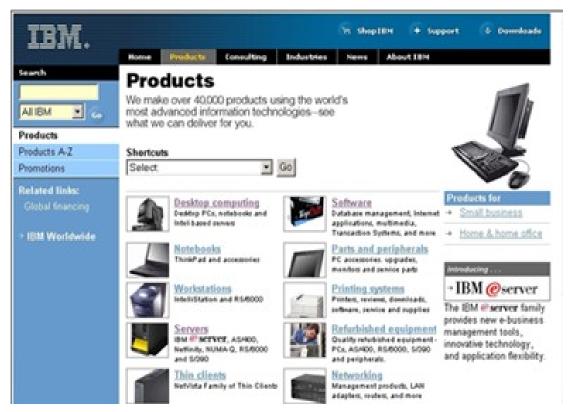
The "Bullseye" redesign launched in 1999, consolidating more than 200,000 high-visibility Web pages into a single new design with standard navigation, page grid layouts and "backbone" applications such as e-commerce, search, and tech support

#### **ROI** Measurements

In the first week after the redesign, IBM saw a 400% increase in online sales and has since seen measurable improvements in online customer satisfaction ratings.



Before: Many different IBM sites existed, with no common information architecture or functionality.



After: A redesign which created common navigation, ecommerce and search functions led to dramatically increased sales.

## SARAH HOPKINS (ARTIST)

Product Website

Metric Leads from art buyers and art galleries

Before No leads during 3 years online

After Some leads Ratio Infinite

Improvement 900% (used as a simplified number)

The Sarah Hopkins case study is described in the User Performance Metrics section, since that was the main metric in the project. However, the number of leads the artist received from art buyers and galleries was recorded as well, and is reported here.

The ratio between some leads and no leads is infinite (which is always the result when you divide something by zero). For the sake of the statistics elsewhere in this report, we have coded the improvement in leads as having a ratio of 1000% instead of infinity (corresponding to an improvement of 900%). This case study was included in the report in the 3<sup>rd</sup> edition.

## JUNIOR'S RESTAURANT (MOBIUS WEB)

Product Website

Metric Conversion rate

 Before
 0.01

 After
 0.10

 Ratio
 1000%

 Improvement
 900%

## **Background**

Junior's restaurant is a Brooklyn institution. It is famed for its delicious cheesecakes and has a fiercely loyal nationwide customer base that orders cheesecakes to be sent to destinations throughout the country. Prior to the launch of the redesigned website in November 2001, Junior's restaurant serviced its customers predominantly through its call center, because users found it confusing to shop at the website, which served mainly to drive customers to the call center. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

Mobius Web, Inc. was asked to create a streamlined and intuitive shopping experience that would encourage customers to repeatedly purchase cheesecakes online, both for themselves and to give as gifts. The challenge was to create an interface that would meet the complicated shipping rules of Junior's perishable cheesecakes, that would make obvious to users that multiple recipients and delivery dates were supported and to encourage repeat buyers by maximizing ease of use.

## Assignment:

- Rework existing architecture to make the store the central focus of the site.
- Redesign Junior's shopping cart to meet complicated shipping requirements, while making it easy for customers to make repeat orders and give gifts.
- Integrate e-commerce database with existing mail-order and telephone database and fulfillment system.

#### Solutions

Mobius created a customized E-commerce website with the following features:

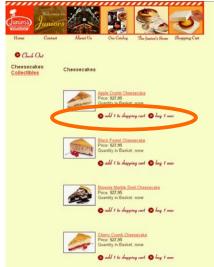
- Users could log in, save their billing address, shipping address, and the addresses of the people to whom they give gifts.
- Users could quickly and easily manage products in the omnipresent shopping cart even over low-bandwidth connections.
- Users could send items to multiple recipients.
- The checkout screen clearly displayed the items in the cart and the estimated total. Users could add and remove products, continue shopping or proceed to final purchase from there. A timeline was introduced to show users' progress throughout the checkout process.
- Users could specify the exact delivery date.

 Mobius also created customized, automated reporting software that seamlessly integrated with Junior's legacy database, reducing the cost and complexity of fulfillment.

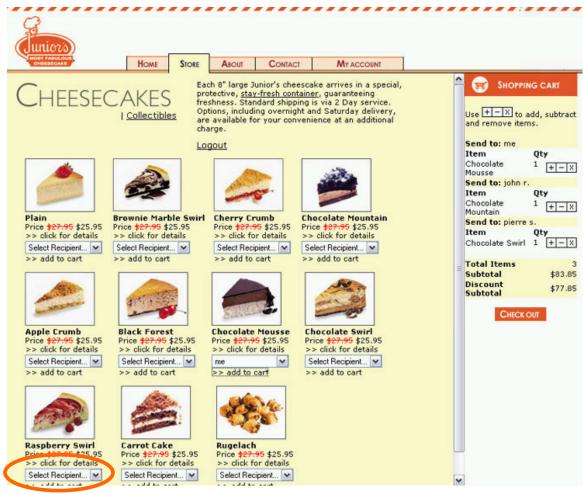
## **ROI** Measurements

	Before Redesign	After Redesign
Sales \$	Negligible sales.	Approximately \$250,000 in online sales during the Christmas season
Conversion Rate	Fewer than 1% of visitors to the online store successfully checked out. The vast majority of users had to use the call center to make orders.	About 10% of visitors to the store purchase items online. (900% increase)





Before: Homepage and Store were separated, and the store presented a confusing choice between "Add 1 to shopping cart" and "Buy 1 now" buttons.



After: The integrated site used tabs to separate types of content. In addition, the "Select Recipient" drop-down list encouraged gift giving by making it simple to purchase gifts for several people all on one screen.

# Metrics Category: Traffic and Visitor Numbers

#### MEDIA NEWS GROUP INTERACTIVE

Product News Website

Metric Residual page views

Before Confidential After Confidential

Ratio 106% Improvement 6%

## **Background**

Media News Group's Interactive subsidiary provides the online component for about 80 newspapers within the chain, including the Denver Post, San Jose Mercury News, the LA Daily News, El Paso Times, and others. Although each site has an individualized design, the companies share some key features. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

#### Problems / Goals

A major goal for news sites is always to increase page views and get readers more invested in the site. As opposed to a straight e-commerce storefront or business promotion, newspaper sites are in the business of building a destination and creating the same sense of continuous and comprehensive product that a newspaper delivers. Given the wide variety of online news sources, this is an especially important challenge for local newspapers.

Getting people to the site is a matter of marketing and news. The Media News Group design team wanted to look at ways to keep people on the site, with an eye toward increasing pages views and branding the newspaper site as a destination for news.

#### Solutions

The designers decided to add a module on most pages that displayed the most e-mailed and most viewed stories at any given moment. The widget features a two-tab layout, with "most viewed" on top and "most e-mailed" beneath. Each tab displays links to the top stories in its respective category. The number of stories displayed varied by site.

## **ROI** Measurements

Stats were provided for three newspaper sites — dailynews.com, twincities.com and mercurynews.com. As its target metric, the team focused on "residual page views," defined as the number of page views by a visitor *after* they viewed a news story page, showing how the module contributed to the site's overall stickiness.

The modules were not deployed consistently across Media News Group sites, which are managed at the local newspaper level. Placement of the module differed from site to site.

Overall traffic also varied on all three sites during the metrics period in question, due to the nature of the news business. All of this together made for a tricky ROI calculation.

We sought to eliminate fluctuations in overall traffic, and to filter out the complication of section fronts (where the design placement of the module varied). In order to find a baseline, we looked at this question: What percentage of total article page views were residual page views?

Across all three sites, that metric showed an increase after the redesign — from 69.2% before to 73.6% after, for an improvement of 6.3% and a ratio of 106.3%.

Internet content traffic follows a fairly consistent mob-mentality pattern — certain kinds of stories will attract traffic from a wide sampling of readers. "Most popular" modules tend to amplify this effect. Over time, the value of the module is likely to increase, since it also reminds viewers on every page that they can e-mail stories through the site.



After: "Most Viewed" and "Most Emailed" lists were added to three different newspaper websites; the placement and size of these elements varied by site.

#### **MODERN FLAT**

Product Website
Metric Time on site

 Before
 2:49

 After
 3:45

 Ratio
 133%

 Improvement
 33%

## **Background**

Modern Flat is a blog devoted to modern apartment furnishings and decor, including architecture, artwork, appliances, plants, accessories and more. This case study was included in the report in the  $3^{rd}$  edition.

### Problems / Goals

After adding daily content to the website, the designer noted that most visitors exited quickly and few advanced to the site's interior pages. He set out to completely redesign the site.

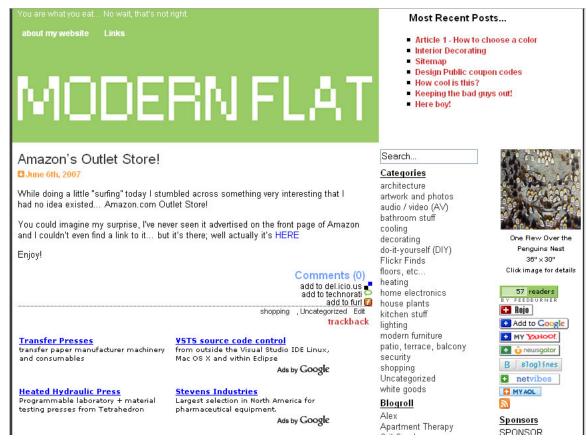
#### Solutions

- The logo in the old design was deep, with little clickable space. A list of the
  "latest posts" was incorporated into the header, contributing to its depth. The
  header was reduced to a shallow stripe across the top. As a result, a second
  content post typically fell above the fold, compared to just one in the old
  design.
- The content column was widened, further improving the page depth to content ratio and making for easier reading.
- Type size, spacing and padding were enlarged throughout the site, including on navigation elements such as category links.
- Links in the old design were non-traditionally colored and looked too much like ordinary type. The redesign made the links blue, so that navigation elements stood out more prominently.
- Social networking links were added to the end of each post (moved there from the far right column), making it easier and more intuitive for readers to cross-post the blog and bring in new readers.

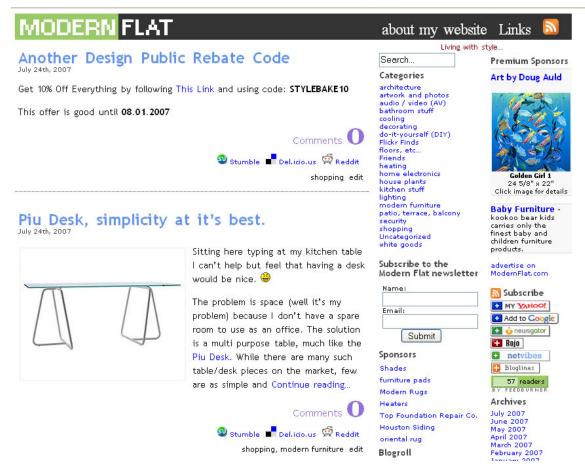
## **ROI** Measurements

In terms of usability, the redesigned site showed strong improvements in time spent on site (increasing 33% from 2 minutes, 49 seconds, to 3 minutes, 45 seconds) and average page depth, which rose 11%.

In addition to the increase in visitor engagement, traffic also rose, thanks in large part to a more aggressive deployment of the social networking bookmarks by both the webmaster and visitors. Returning visitors also improved from 10% to 13%.



Before: A large header and narrow content column limited the amount of content visible to users.



After: Changes that made links more obvious and content more visible (such as a narrower header and wider content column) led to substantial increases in the time spent on the site.

## HARRISBURG AREA COMMUNITY COLLEGE

Product Website
Metric Visits
Before 770,921
After 1,058,906
Ratio 137%
Improvement 37%

# **Background**

Harrisburg Area Community College (HACC) serves more than 20,000 students across multiple locations in central Pennsylvania, as well as through online courses. This case study was included in the report in the  $4^{th}$  edition.

# Problems/Goals

The school needed to promote new features and functionality (such as a student portal, college events calendar, and email system.) The original design had been

created by a graphic artist who worked with the public relations department. This it had a heavy public relations influence.

#### Solutions

The website was redesigned to prominently display links to important new features while preserving as much as possible of the old layout. The teams studied Google Analytics traffic (to identify underutilized features) and collected informal user feedback to prioritize placement and prominence of new elements.

Students in the cafeteria to participated in card sorting activities to help group the large number links in the menu in the "Student Services" section.

By creating an easy-to-find utility area in the top right corner of the homepage with links to essential student resources such as the "MyHACC" student portal and the "HAWKMail" email system, the homepage became a much more useful destination for students, which contributed to both the 37% increase in traffic to the website, and the 106% increase in traffic to the HAWKMail pages.

In the old design, the "Course Schedules" page (which allowed students to search for classes) was one of the top ten most-visited pages. The new design made this common task more efficient by adding a specific "Search Class Schedules" module on the right side of the homepage, which reduced the number of visits to the "Course Schedules" page by 46%.

Other design changes reduced the amount of clutter on the page and provided direct access to rich content, which contributed to the increase in pageviews. For example, the old design featured six small thumbnail images in the header, which weren't large enough to see easily. The new design eliminates these small header images and instead displays one large featured image in the main page content. Other small changes, such as consolidating the color scheme into fewer colors and using color blocks to divide different elements in the right sidebar, help make the page easier to scan and understand quickly.

#### **ROI** Measurements

To allow for differences in the seasonal traffic of a school, the first six weeks of the fall quarter before the redesign is compared with the first six weeks of the spring quarter after the redesign.

The new design greatly increased total visits, pageviews, and unique visitors. Enrollment increased slightly between the two measurement periods but that increase was not enough to explain the change in web traffic.

Measurement	Before	After
Total Visits	770,921	1,058,906
Unique Visitors	212,489	272,223
Pageviews	2,440,035	3,180,935
HAWKMail Pageviews	59,276	124,227
Course Schedule Pageviews	92,335	49,696



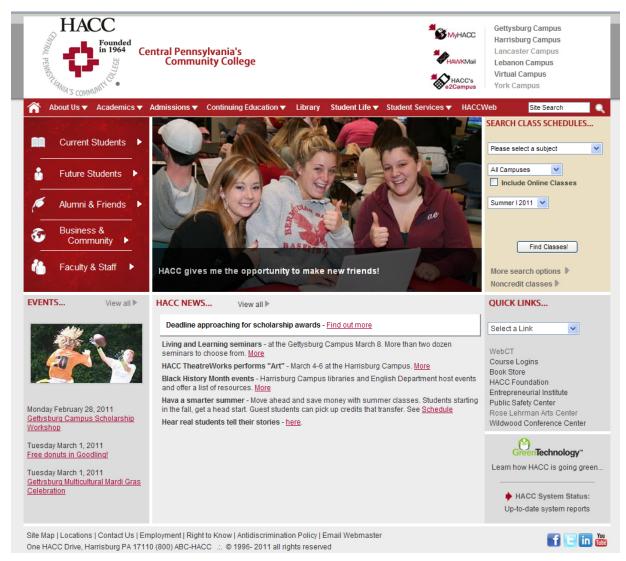
Before: The homepage did not provide direct access to essential student resources such as the student portal and email system.



Before: Users had to click on the "Current Students" page in order to access the HAWKMail email system.



Before: The only way to access different student services was via an alphabetical list.



After: The new homepage includes links to the student portal and email systems in the upper right utility area, as well as module to let students search for classes directly from the homepage.

# Student Services ▼ HACCWeb

Site Search



# Most Popular

Financial Aid, Tuition, Transfer Services, Registrar, Higher One Refund

# Getting Started

School District Sponsorships, General Scholarships, HACC ID and PIN FAQs, Placement Testing, What Can I do With this Major...

# While at HACC

<u>Tutoring Services</u>, <u>Career Services</u>, <u>Find My Advisor</u>, <u>Health Careers</u>
<u>Advising</u>, <u>Refund Info, Drop/Add Courses</u>

#### Additional Information

Adult Students, Advising, Child Care, Counseling, Disability Services, Student Accounts, Veteran's Affairs

View all...

After: Card sorting with students helped create a system for grouping Student Services links by importance and task type.

#### **HEALTH CARE WITHOUT HARM**

Product Website

Metric Reduce exits from issues pages

Before 70% remained on site After 97.5% remained on site

Ratio 139% Improvement 39%

#### **Background**

Health Care Without Harm (<a href="http://noharm.org/europe">http://noharm.org/europe</a>) is the website for a coalition of health care providers and related organizations. Its goal is promoting safer products and practices. The site features 10 issue areas, including medical waste, food and building contaminants, and green practices.

Each issue area incorporates a text overview and several sub-pages containing articles and other resources. The main page is a short article about the subject and includes a sidebar with links to resources. In some cases, links are also embedded with the overview's text. This case study was included in the report in the 3<sup>rd</sup> edition.

#### Problems / Goals

Visitors often exited the site from the main issue page, without clicking through to the articles and resources. This resulted in lower depth of visits and, of course, fewer people accessing the resources the site offers. The objective, therefore, was to improve the stickiness of the issue page and encourage people to access the section's more targeted content.

#### Solutions

As a trial, prior to a total site redesign, the designer replaced the text overview format with an abbreviated text description and simple contents page that starts over the fold. The overview was moved to an inside page, which was linked from the table of contents.

The design change was implemented on a randomly selected issue page, while the remainder of the site kept the old design. Note that the comparisons provided are between the new design and the old design on comparable-traffic pages during the same period, rather than period over period.

#### **ROI** Measurements

Under the original design, 30% of visitors exited from the issues page. Average page depth for visitors within the section was generally less than 1.5. The redesigned page featured an exit rate of just 2.5%, with an average page depth of 2.2.

Traffic was also more evenly distributed throughout the redesigned section. Under the original design, more than half the traffic to the section went to the "issue page" and the next best page was viewed by only 15% of visitors and most of the rest were seen by less than 10% of visitors. In the redesigned section, the contents page accounted for just 22% of the traffic, and the next three most popular pages held between 13 and 17% each.



Before: Visitors often exited without exploring more pages or resources.



After: The addition of a hyperlinked outline led users to explore more pages, and decreased the number of users who exited the site from the first page.

#### **GAD.DK (SOLID CREATION)**

Product Online Bookstore
Metric Return visitors
Before Confidential
After Confidential

Ratio (original to final) 140% Improvement 40%

The Gad case study is described in the Conversion Rate Metrics section, since that was the main metric in the project. However, visitor numbers were measured as well, and are reported here. This case study was included in the report in the 3<sup>rd</sup> edition.

#### KAMAT'S POTPOURRI

Product Website navigation

Metric Traffic
Before Confidential
After Confidential

Ratio 140% Improvement 40%

### **Summary of Case Study**

Most people never knew there was a navigational toolbar at the bottom of the page. The team created a vertical toolbar instead of the horizontal one.

Kamat's Potpourri saw great traffic improvement after their redesign. Internal traffic increased by 40% in a month. For the full report about this case study see the Feature Use Metrics section. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### **BELL CANADA**

Product Homepage
Metric Weekly visitors

 Before
 300000

 After
 450000

 Ratio
 150%

 Improvement
 50%

# **Background**

Bell.ca was established in 1995. Their website evolved from a modest communication medium into an award-winning, customer-designed website providing various self-service applications. *This case study was included in the report in the 1*<sup>st</sup> *edition.* 

#### Problems / Goals

The goal of the redesign was to improve the navigation, interaction, appearance, and thus the overall customer experience. The user-experience team wanted to bring

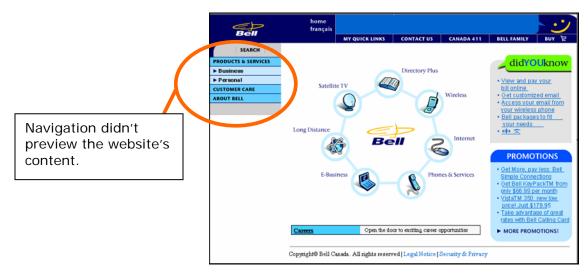
more information to the top level, give the website a cleaner, more current look, create a database-driven back end and enable cross-selling.

# **Solutions**

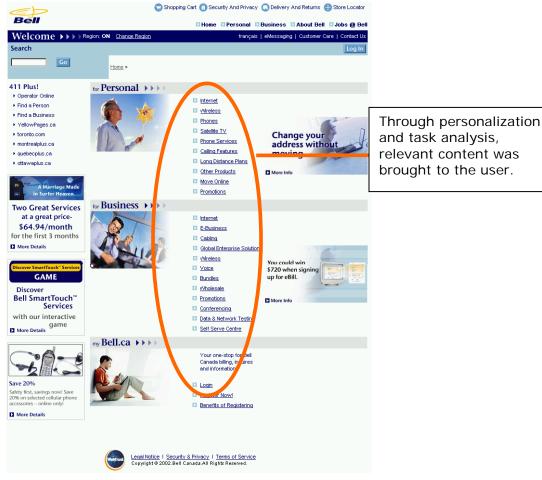
• The site was redesigned visually to promote trust and the company's professional image. Content important for user tasks was moved to the homepage. Personalization was added and Flash was reduced. The new site showed the benefits of using the site instead of just promotional material. Icons were introduced for tasks.

# **ROI** Measurements

Measurement	Before	After
Download time	40 seconds at 56k	27 seconds at 56k
Number of visits per week	300,000 (Q4 2000 average)	450,000 (Q1 2002 average)
Navigation type	Left navigation was preferred (by 60% of users)	Central navigation via hotlinks was preferred (by 93% of users)



**Before** 



After

#### AVON AND SOMERSET CONSTABULARY

Product Informational Kiosk Metric Sessions
Before 2,396 (average)
After 3,722 (average)
Ratio 155%
Improvement 55%

# **Background**

Police in the southwestern county of Somerset, England, have deployed a series of public access kiosks in the neighborhoods they serve. The kiosks offer news, crime statistics, wanted posters, job listings, directions to the police station and non-emergency messaging. The kiosks were designed in-house, and the department hopes to re-sell the software to other police forces. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

#### Problems / Goals

The goal was to create a kiosk interface that was easier to use, resulting in more visits from more people. The kiosk program has to compete for funding with all of the department's other priorities, so wider usage is key to winning public support and continued funding.

Before the redesign, the interface sported a slick, corporate-style interface. The design was very professional in appearance, but it was heavy on text, and the navigational choices were not necessarily obvious. For instance, the touch-screen buttons were not sharply highlighted. This approach has its merits for a website, where users are accustomed to clicking around, but kiosk navigation has different demands. They need to appeal to users at all levels of technical proficiency, who may not have Web-savvy navigational instincts

#### **Solutions**

- The original interface was English-language only. The new interface opens
  with a choice of languages and a pretty impressive selection at that, 16
  languages including English, Arabic, Japanese, Chinese, French, German,
  Greek and more. Users can even elect to receive information in sign language
  form.
- The new design is much simpler. The buttons are set off with drop-shadows, making them more intuitive for users at all levels. The designer experimented with different button designs to see which type of button was most appealing on a touch-screen.
- A much wider selection of landing pages is displayed on the front page, making it easier for users to go directly to the information they need, while also displaying the full range of options more efficiently. It typically only takes two or three clicks to reach an information destination (such as a crime statistics report).
- A prominent home page button was added at the top of the page, along with larger buttons for popular functions such as "print" and "e-mail."

#### **ROI** Measurements

Visits to the kiosks increased an average of 55% for the six months after the redesign, compared to the prior six months. The number of kiosks remained the same, and the department didn't do any extra promotion, which means that the increase is almost entirely attributable to the new interface.



Before: This public information kiosk interface had a great deal of text, and the buttons did not stand out.





After: Buttons clearly stand out from the background and the opening screen focuses on selecting a category, rather than providing a lot of text to read.

# MINISTRY OF FINANCE, ISRAEL

Product Website

Metric Users visiting the homepage only

Before Confidential After Confidential Ratio 200%

Improvement 100% (half as many abandonments)

# **Background**

The Ministry of Finance is one of Israel's most important government offices. The Ministry of Finance was the first government office to have a website (1995), and its website is a home to many subsites of the various ministry units. The Ministry publishes a large volume of crucial economic information, which is updated daily. Professionals and the general public alike use this information. *This case study was included in the report in the 1st edition.* 

The Ministry's aspiration was to restructure the site to become an economic portal that would be easy to navigate. It was planned to be a home for the various units' sites and to bring into focus the hot issues of the Israeli economy. The goal was to achieve that with minimal costs and technological changes. To achieve these goals,

the Ministry engaged Addwise, a consulting company specializing in information architecture and usability testing.

#### Problems / Goals

When Addwise started work on the site, there were:

- More than 5,000 static pages
- 30 subsites
- Millions of hits every month
- More than 40,000 unique visitors per month.

Despite these seemingly impressive traffic statistics, 60% of users left the site after less than a minute and only 8% stayed more than 8 minutes. Thus, it would seem that the old design didn't sufficiently engage users. websites always lose some visitors who arrive at the homepage by mistake, but 60% is too much of a loss for an important site.

Two Addwise experts analyzed the site and its log files, using its own product, WebArch log analyzer.

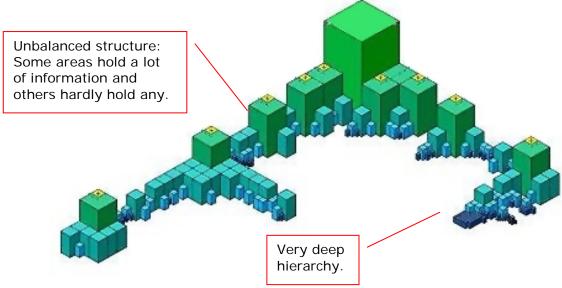
The main problems they found were:

- Users couldn't tell where they were.
- The only menu was organized by type of content (links, applications, articles, and so forth). Users had problems finding what they wanted.
- Information was hidden inside the different units' subsites.
- The access to the search engine was hard to find.
- There was no index.
- Users and information got lost in the deep hierarchical site structure.
- The interface was outdated.



Before: Original homepage

An automated analysis of the site (by Linkbot) produced the following information map and gave the team a clear idea as to what was wrong with the old site (The tall cube is the homepage, the smaller cubes are linked pages and so on).



Before: information map

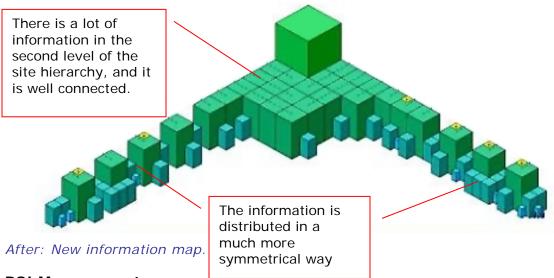
#### Solutions

Addwise redesigned the information architecture by regrouping items by audience and topic, highlighting interesting items, and providing direct access to subsites.

They created a portal interface that enabled the ministry to emphasize selected popular topics.



The new MOF site in January 2000.



#### **ROI** Measurements

One month after the redesigned site was launched, the logs showed that although the number of user sessions stayed more or less the same (at around 40,000 in 2000) users' behavior changed:

- Average visiting time increased 30%.
- The number of visited pages increase 25%.
- The number of people who visited the homepage only decreased by 50%.

Because only the interface design and the information architecture changed — not the content — these increases meant that more people found what they were looking for. The site was much friendlier, more usable, and user feedback was very positive.

#### The future

Today the site is still the most popular government ministry website in Israel. Every month in 2002 the site's statistics have shown 75,000 to 85,000 user sessions.

The Ministry's site is very dynamic; the design team keeps improving it and learning from their mistakes.

The current site evolved from the site that was launched in January 2000. The main principles that were established when Addwise designed the new site are still being followed today, as shown in the next screenshot, from July 2002.



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After: The design evolved in 2002, following principles that worked in the original redesign.

# HOMEPORTFOLIO.COM (INTERACTION DESIGN)

Product Website
Metric Traffic
Before Confidential
After Confidential
Ratio 229%
Improvement 129%

# **Background**

HomePortfolio.com features the best in home design. It helps people do research on home design products, then refers them to nearby retailers. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

The redesign goal was to make users' decisions easier by giving them more information. The business goal was to increase transactions and traffic to pages responsible for revenue.

#### **Solutions**

The design team decided to remove the drop-down list and put each company's name directly on the page. In the original design, the destination companies were visible only if the user bothered to click the list, and the list did not have enough space to explain the choices.

For the new design, the team asked each company to provide a short description of its products so shoppers would know what they would find at each site. The designers used only brief text descriptions in order to maintain the balance of information on the page and keep the download time low. By putting text and links on the page instead, the redesigned site provided enough information for users to make better choices.

#### **ROI** Measurements

Looking at about a week before and a week after the change, traffic to the sites linked by the static list (rather than the old drop down) increased by 129%, while overall site traffic remained constant.







# **CLIFFORD QUALITY LANDSCAPES (TESSARAE DESIGN)**

Product Website

Metric Visits during Q4 2000 vs. Q4 2001

 Before
 477

 After
 1105

 Ratio
 232%

 Improvement
 132%

#### **Background**

Tessarae is a small studio based in Seattle, Washington, with a background in Webbased training, instructional design, e-commerce, graphic and fine arts. They specialize in serving the nonprofit sector and small, service-oriented businesses. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

Clifford Quality Landscapes wanted to use their written and visual content more effectively to describe their business and services, and to increase site visits and website-generated projects and revenue. They also wanted to measure website outcomes more accurately and provide strong visual examples that clients could refer to when discussing their landscape-design needs. Finally, CQL wanted to add landscaping / gardening knowledge and lifestyle features, both through onsite resources and offsite links.

#### Solutions

The site was redesigned from an original site of 4 pages into a 45-page site using current Web scripting techniques and standard, valid HTML.

#### **ROI** Measurements

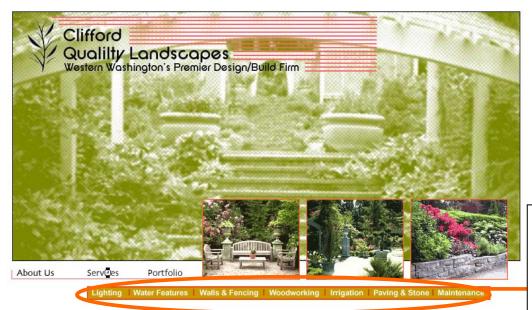
After the launch of the website redesign on the 10<sup>th</sup> of September 2001, website-generated income has been tracked to more than \$200,000.00. (No financial metrics for the previous version of the website exist).

	Before – 2000			After – 2001		
Measurement	October	November	December	October	November	December
unique visitors	64	143	135	250	277	226
total visits	76	216	185	374	356	375
Page views	86	397	348	1078	999	1585



Very few cues are given to tell visitors what content is available.

# **Before**



The various services are expanded for users to choose from.

Clifford Quality Landscapes
Fine Residential Landscape Design, Construction & Maintenance

After

#### **NEW YORK LIFE**

Product Website
Metric Traffic
Before Confidential
After Confidential
Ratio 247%

Ratio 247% Improvement 147%

# **Background**

New York Life Insurance Company, a Fortune 100 company, is the largest mutual life insurance company in the United States and one of the largest life insurers in the world. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

To increase:

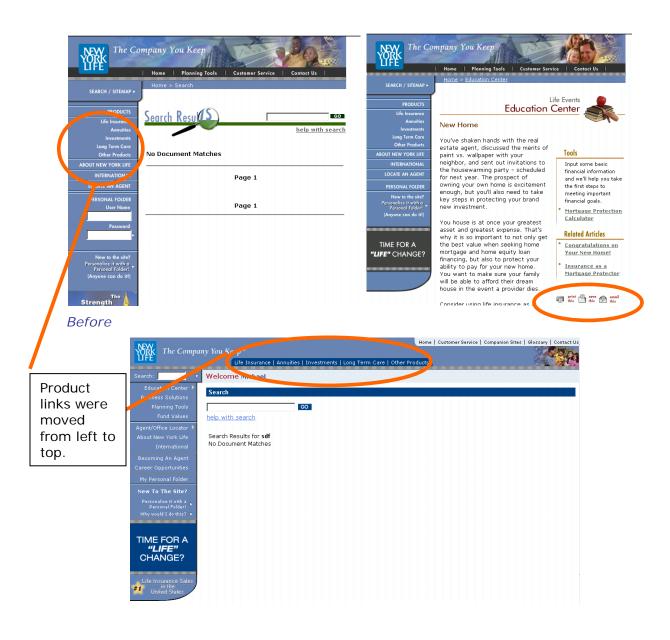
- Traffic to product information
- The number of users who request a New York Life Agent contact them
- · The number of users who locate and agent or an office
- The number of users who inquire about becoming New York Life insurance agents.

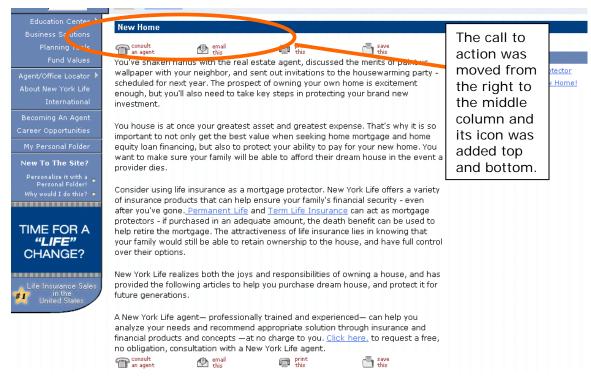
#### Solutions

- Changed the placement of product links from left navigation to top navigation.
- Moved the call to action asking users to request contact from a New York Life agent from the right-hand side of page to the middle column, and added the icon to both the top and bottom of the content area.
- Split the agent and office locators from one another. Previously, there had only been one link to an "Agent Locator."
- Moved "Becoming an Agent" up to the left-hand navigation, making it available from every page of the site.

#### **ROI** Measurements

	Increase	Ratio
Agent Locator	10%	110%
Become an Agent	73%	173%
Investments	126%	226%
Annuities	178%	278%
Consult an Agent	189%	289%
Life insurance	217%	317%
Office Locator	410%	510%
Geo. mean		247%
Average traffic increase	147%	247%





#### After

#### **DYNAMIC GRAPHICS (CREATAS)**

Product Creatas website
Metric Returning visitors

Before Confidential After Confidential

Ratio 500% Improvement 400%

# **Summary of Case Study**

Some of project goals included increasing Web sales, attracting new customers, increasing the conversion rate, and shortening the sales and purchase cycle. The design team developed a persistent tool palette at the top of every page to handle common functions such as Search, Cart, and Account Info.

Both monthly user sessions and returning visitors increased more than 400% after the launch of the redesigned site. For more details on this case study, see page **Error! Bookmark not defined.**.

#### **OAK HAVEN FARMS**

Product Website

Metric Monthly visitors

 Before
 325

 After
 1800

 Ratio
 554%

 Improvement
 454%

# **Background**

Oak Haven Farms ~ Peeman & Sons is a highly regarded breeder of racing pigeons. The sport of pigeon racing has been practiced for thousands of years and has become increasingly popular in the US. Oak Haven Farms' first website was done by a hobbyist, the next was done by a programmer, but the owners were still not satisfied. This case study was included in the report in the 1<sup>st</sup> edition.

#### Problems / Goals

Oak Haven Farms wanted to sell more online and was dissatisfied with their site design overall. They decided to redesign their website and relaunched in November 2001.

#### Solutions

Oak Haven Farms' entire previous website had been done in frames, so pages could not be bookmarked. The site was also very difficult to navigate. In the new design, the frames were eliminated, and the navigation was placed on every page in a visible location that didn't take up much content space.

The customer base for Oak Haven Farms is, of course, pigeon flyers. This audience was a challenge because they tend to be older men who are typically computer novices. They often have older computers with dial-up modems. To best serve this audience, the site was designed for easy navigation, with large type and very specific instructions for downloading PDFs. All images were optimized for rapid loading, and no plug-ins were required.<sup>19</sup>

#### **ROI** Measurements

Before the redesign, the site enjoyed 250–400 visitors monthly. After the new website launch, about 1800 users visited the site on a monthly. Because this website's users are a very small and specialized market, Oak Haven Farms is now very satisfied with the increased traffic and sales.

<sup>&</sup>lt;sup>19</sup> Although this case study was completed long before Nielsen Norman Group's *Usability for Seniors* was published, Oak Haven's experience emphasizes the importance of using specific design principles to create a successful user experience for seniors. Information about our research study is available here: <a href="http://www.nngroup.com/reports/seniors">http://www.nngroup.com/reports/seniors</a>



MENU
Home
News Flash
Top Results
Customer Login
Video Sales
Online Sales
Contact
Breeding Stock
Photo Album
Editorial
Useful Links



#### Oak Haven Farms ~ Peeman & Sons Introduction

I am writing this introduction so all of you may learn who I am. At present, we live in Texas, not far from Dallas in a town called Springtown. We are surrounded by luscious acres of greenery in the spring, where most farmers have their horses grazing in the pastures. In the summer it is hot and the grass turns brown and during the winter it is very comfortable. In April 2000, we moved from Canada where we had lived for nearly 30 years. Before going further

I would like to take this opportunity to introduce the PEEMAN family. First my wife Bea, without her help, I could never have achieved this level of success. Secondly, my two sons, Duncan & Dennis, both are pigeon fanciers with all their hearts. Both are still living in Canada. Duncan cannot spend much time with the birds, he is running a restaurant. Dennis is married to Julie and we now have a very nice daughter. They both live in Canada and due to other commitments, they don't have much time to be with the pigeons but in time to came they will be back into the sport again.

I was born in Middelhamis Holland, the Mecca of Racing Pigeon fanciers where some of the finest were located. To name a few, first and in my opinion, one of the best lofts ever, Ko Nipius. He has won more Championships in the N.A.B.V.P.( Nederland Algemene Bond Van Postduiven Houders), than anyone else. Second, Visser-Peeman. My Dad, Leen Peeman, with companion Henk Visser. I was lucky to be part of their combination. We were Champions of the N.A.B.V.P. in 1957 and a few times in the top five (approx. 40.000 flying members). Third, Kern-de Weerd, again a Champion who could win a national on any given day. De Weerd is close family to the legendary Piet de Weerd. Fourth, Gebr. Vroegindewey, probably the closest friend of Jan Aarden. So when I say, I came from the Mecca of Racing Pigeons, as a Pigeon fancier, you would have loved to be in my shoes.

#### **Before**

The frames

didn't allow

users to

bookmark specific

pages and

took up a lot of content space.

# ARMO

# Oak Haven Farms ~ Peeman & Sons

~ America's Premier Racing Pigeon Stud! ~

WELCOME • CATALOG • FEATURED BIRDS • TOP RESULTS • VIDEO TAPE-BREEDING STOCK • ABOUT US • EDITORIALS • LINKS • CONTACT US • SITE MAD

# Welcome!

Thanks for visiting America's Racing Pigeon Stud! Located in beautiful Springtown, Texas, we have combined the very best racing pigeons of Europe, the United States and Canada together. You won't find a higher quality breeding facility anywhere with the capacity for producing winners like we can.

Please browse our site and you'll see why our incredible birds are backed with this quality guarantee: "If you are not completely satisfied, send the bird back within seven days and we will refund your costs 100% plus pay the shipping charges to send the bird back to ust"



Dream Boy 99-NL-2452607 1st National Ace Pigeon Holland 1st World Champion v.1.

▲ back to top

After

The navigation

was reduced to

links at the top of each page.

two rows of

48105 WARM SPRINGS BLVD. FREMONT, CA 94539-7498 USA

INFO@NNGROUP.COM

135

# Metrics Category: Feature Use

#### GAD.DK (SOLID CREATION)

Product Online Bookstore
Metric Newsletter sign-ups

Before Confidential After Confidential

Ratio (original to final) 130% Improvement 30%

The Gad case study is described in the Conversion Rate Metrics section, since that was the main metric in the project. However, the number of sign-ups for the email newsletter was measured as well, and is reported here. This case study was included in the report in the 3<sup>rd</sup> edition.

#### BARRICK

Product Website

Metric Number of Facebook "Likes"

Before Confidential After Confidential

Ratio (original to final) 150% Improvement 50%

# Background

Barrick is the largest pure gold mining company in the world, with interests in 26 different operating mines across five continents. Its website, Barrick.com, offers information for investors and details about the company's projects in various regions. This case study was included in the report in the  $4^{th}$  edition.

#### Problems/Goals

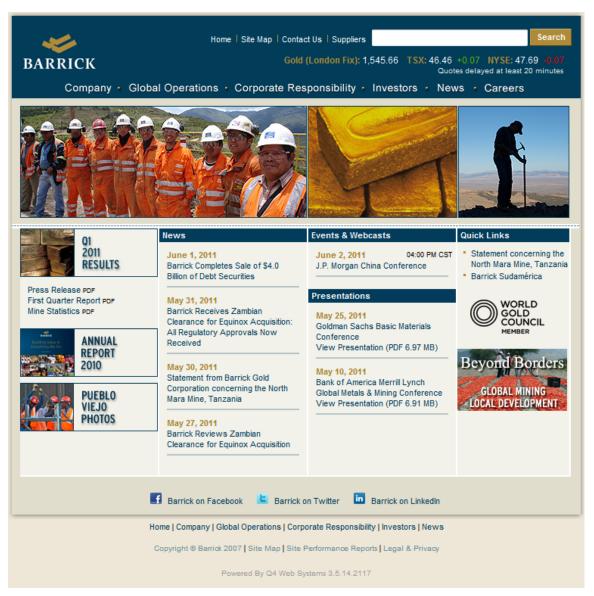
The design team sought to increase the number of people who chose to "Like" Barrick on Facebook. The original design included a footer link "Barrick on Facebook" with an image of the small blue Facebook icon. This link opened the Barrick Facebook page in a new window, and users could click the "like" button on that page.

# Solutions

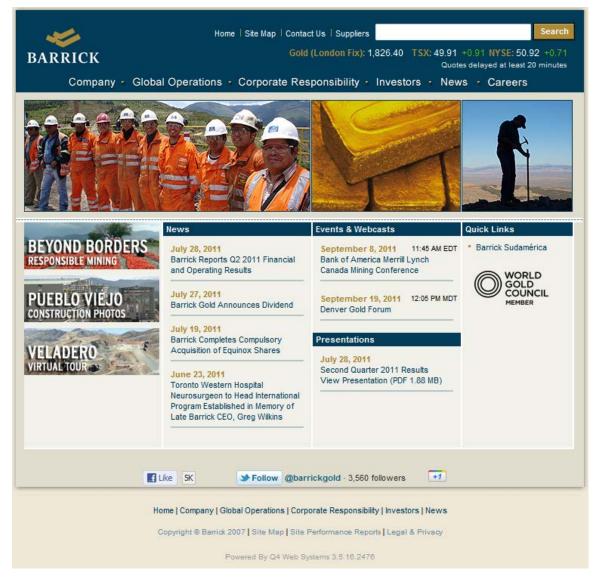
The designers shortened the process and used a more standard front-end UI element by replacing the "Barrick on Facebook" text link in the footer with a "like" button, which includes the blue Facebook icon. Thus users can now "like" Barron with a single click on their website, without the need to open a new browser window, load a new page, and locate a button on that page.

### **ROI** Measurements

The direct placement of the "like" button in the footer on Barrick.com led to a significant, 50%, increase in the average number of people who "like" Barrick on Facebook each week.



Before: The footer included a link which opened the Barrick Facebook page in a new window.



After: The footer includes an actual "Like" button instead of just a link to the Barrick Facebook page.

#### T-MOBILE SLOVAKIA SELF CARE (UI42)

Product Self-Service Web Portal Number of online transactions

Before Confidential
After Confidential
Patio (original to final)
175%

Ratio (original to final) 175% Improvement 75%

Product Self-Service Web Portal

Metric Number of people opting for paperless billing

Before Confidential After Confidential

#### **Background**

T-Mobile Slovakia is one of the leading mobile communications providers in Slovakia. Its online self-care portal requires authentication and allows customers to perform account functions such as review account usage, view invoices and spending, activate and deactivate services, as well as access online help information. U142 is a consultancy. *This case study was included in the report in the 4<sup>th</sup> edition.* 

#### Problems/Goals

Most of the visitors were using just a few features of the portal and were lost while browsing through the portal. The old landing page was divided into three columns: left navigation, content, and right column. While the header and footer were consistent, the main tab navigation was not very visible. Instead the most noticeable items on the page were the static e-shop banner on the top right, the spending module, and quick links module. Users did not engage much with the site because the main navigation categories (Services and Rates, Telephones, E-Shop, Internet, T-Zones, and Help) weren't closely related to tasks users needed to accomplish. In order to get from the main navigation to the actual content that was relevant to a task, users would have to start at one of these broad categories and drill down, risking getting lost.

The redesign goals were to:

- Create an intuitive environment
- Show the visitors the most important data immediately after sign in
- Satisfy the marketing needs with proactive up-sell

#### **Solutions**

The designers simplified the navigation to prevent users from becoming lost in dropdown menus. They created a modular layout which allows easy access to the most commonly used information, including:

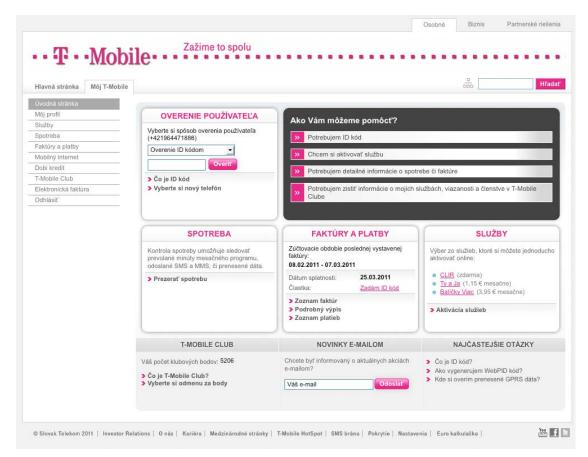
- Interactive help module
- Current consumptions (minutes, SMS, data)
- Current invoice information
- Available services (up-sell)
- Loyalty offer (T-Mobile Club)
- Newsletter sign in
- FAQ

#### **ROI** Measurements

When the new design was implemented, the portal experienced a 75% increase in all online transactions, and a more than 100% increase of the activation of online billing.



Before: The most visible items on the page were the static e-shop banner, the spending module, and a "quick links" module.



After: Modular layout with Check Usage, Bills and Payments, and Services modules, as well as links for help with common questions in the top right corner.

#### MAINLINETRAVEL.COM (HAYSTACK IN A NEEDLE)

Product Homepage

Metric Requests/subscribers

Before Confidential After Confidential

Ratio 200% Improvement 100%

### Background

Mainline Cruise and Travel is a full-service travel agency with offices across the Midwest USA. They specialize in all types of travel, such as cruises, golf vacations, scuba diving, whitewater rafting, honeymoons, and international destinations.

Haystack in a Needle is a Web marketing firm based in Minneapolis, Minnesota, founded in 2001. They primarily perform search engine optimization for clients but often get involved in site modifications to improve search engine optimization and increase clients' ROI. This case study was included in the report in the 1<sup>st</sup> edition.

#### Problems / Goals

The Haystack in a Needle team's goal was to make the navigation easier and make access to content simpler. For example, the navigation to the majority of mainlinetravel.com was done through the top navigation or the icons on the left margin. Unfortunately, visitors couldn't figure this out. There were additional issues such as images that were links but didn't look like links.

#### Solutions

The Haystack in a Needle team revealed more of the website's content on the homepage. They also changed some of the icon links to words, such as "Contact Us" and "Subscribe."

#### **ROI** Measurements

The number of requests almost doubled after the redesign, and the number of new subscribers per week more than doubled.





After

#### HARRISBURG AREA COMMUNITY COLLEGE

Product Website

Metric Visits to HAWKMail

 Before
 59,276

 After
 124,227

 Ratio
 206%

 Improvement
 106%

# **Case Study Summary**

The redesign goal was to more prominently feature the new student email system, HAWKMail. The original design included a link to the HAWKMail system on the "Current Students" page; the new design featured a link to HAWKMail in the header of every page on the website.

For a full report about this case study see the "Traffic and Visitor Numbers" section of this report. This case study was included in the report in the 4<sup>th</sup> edition.

#### ANONYMOUS ELECTRICITY COMPANY

Product Website
Metric Feature use

 Before
 0.06

 After
 0.13

 Ratio
 217%

 Improvement
 117%

# **Background**

This organization is a state electricity company that uses its website to collect feedback and information from customers. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

One of the website features was an online survey. Unfortunately, people were not completing the online survey correctly and fully, which caused data problems and more work for the telephone customer service representatives.

#### Solutions

To meet the redesign objectives, users had to be able to perform three key tasks. Through usability testing, the design team discovered the what needed to be changed and addressed those problems in the redesign.

The objective tasks:

- Answer the question sets. The survey contained eight sections (Heating and Cooling, Water Heating, Laundry, Refrigerators, Pools, Lighting, Appliances, Cooking) each on its own page. Although users could see a partial report after answering only the heating and cooling questions, a complete report was delivered only when all question sets were answered, thus encouraging completion of all eight question sets.
- **See a report.** Customers should be able to preview their report from any point in the survey and get a complete report at the end. The preview feature introduced the risk that users would access their report after only partially completing the survey and accidentally depart with incomplete information.
- Play "What if?" Test users loved the site's "what if" function once they found it. If users found and used this function, the perceived value of the site would go way up. The redesign needed to make "What if" evident to users.

Key changes to the navigation cluster included:

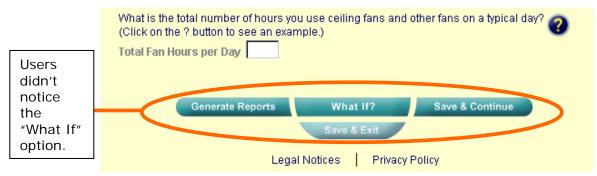
- The number of buttons was reduced to three by eliminating the "Save & Exit" button.
- Buttons were redesigned and rearranged to differentiate between tools (What if, Preview Report) and navigation (Continue). The project team decided this was the key change.
- Buttons were renamed. "What if" became "What if I change ..." and "Report" became "Preview Report." The latter change was to communicate that the report was not complete yet.

### **ROI** Measurements

Results are based on 500 sessions completed after the redesign.

	1.0 Benchmark	1.1 Benchmark
Users who saw a report	94%	96%
Users completing all question sets	63%	91%
Users who played "What if?"	6%	13%

- The key success was that the number of people completing the survey has improved greatly, delivering the full benefit of the site to more users.
- A hidden success is that although the number of users who saw a report improved by only 2%, the large increase in users completing all question sets probably indicates that the reports being delivered are more complete, and therefore more satisfactory, than before the redesign.
- "What if" sessions more than doubled but remained below desired levels. Likely the "Continue" navigation is the most attractive option on the page, and further navigational changes must be made in order to divert users from the main task of answering audit questions and engage them in play.



# Before



After

#### **DEERFIELD.COM**

Product Homepage

Metric Number of downloads during the three weeks before the

redesign vs. the three weeks after the redesign

Before Confidential After Confidential

Ratio 234% Improvement 134%

## **Background**

Deerfield.com is a software distribution company founded in 1994. They provide marketing, distribution, sales and support services to software developers, and also develop and distribute their own software products. Deerfield.com guides customers to purchase or upgrade, obtain support, or download trail versions of their software. They also offer private websites for their partners, distributors and authors. *This case study was included in the report in the 1st edition.* 

## Problems / Goals

The in-house user experience team at Deerfield.com, defined four main problems:

- 1. Users coming to the homepage seemed to be having problems finding upgrade information and figuring out how products were classified.
- 2. Deerfield.com had a higher-than-normal rate of users who looked at the homepage and left.
- 3. The average user saw only four pages per session.
- 4. The homepage did not contain any task-based links (Purchase / Upgrade, Download, Support).

## Solutions

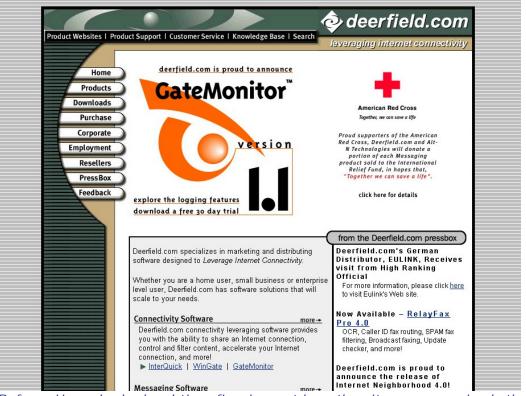
The team:

- Removed items from the homepage that weren't critical and added more direct links to the site's content and help.
- Removed the breadcrumb from the first page in the site, where it served no practical function.
- Removed product classifications and replaced them with terse product list. A link to the detailed product list was also provided.
- Added support information to the homepage.
- Added a store section that allowed users to purchase or upgrade directly from homepage. An "Upgrade a current product" drop down box was added as well, with text that clearly stated that the drop-down was for upgrades, to avoid confusion about its being product information.
- Search was moved to the center of the page.
- Standard "about deerfield.com" text was moved to the bottom but still viewable above the fold.
- Eagle image was resized, which saved load time and allowed more room for useful content.

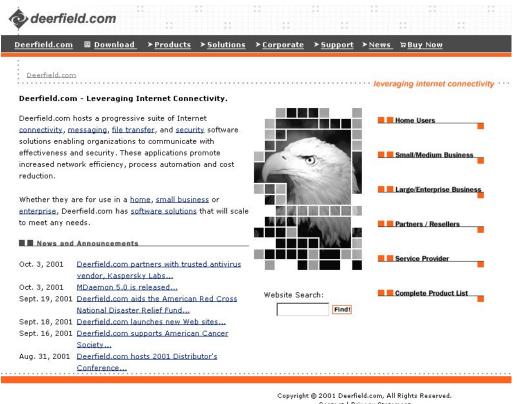
## **ROI** Measurements

The following graph shows the impact that the redesign had on Deerfield's product downloads, which ultimately effect sales (the ratio of number of downloads to sales is relatively constant).





Before: Users had a hard time figuring out how the site was organized; the entire top section of the page was focused on special promotions and did not help users choose a category or understand the product offerings.



Contact | Privacy Statement

ized into task and tonic hased cat

After: The navigation is clearly organized into task and topic based categories at the top and audience-based groupings down the side, and the search function appears as an input box rather than a link.

## **DIRECT MARKETING ASSOCIATION**

Product Member Registration

Metric Clickthrough

Model A 1.62% Model B 4.11% Ratio 254% Improvement 154%

#### Background

The Direct Marketing Association is a trade group with more than 3,600 members among business and nonprofit organizations that use direct marketing techniques. Its website, the-dma.org, offers resume posting and personalization features for both members and non-members. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

#### Problems / Goals

The design team set out to test the effectiveness of different methods of encouraging visitors to sign up for a new account. The site's default call to action was a text link underneath the sign-in box on the home page stating "Get A Free Web Account."

## **Solutions**

Designers tested a call-to-action ad, placed in the center of the page, in addition to the existing text link. The ad described some of the benefits of membership and featured a large color button labeled "Subscribe Now."

#### **ROI** Measurements

The combination of the text link and the call-to-action ad generate significantly more clicks than the text link alone — more than two and a half times as many. The call-to-action also performed better on its own than the text link by itself.

The text link, served on a page with no call-to-action ad, had a clickthrough of about 1.62%. The call-to-action ad itself had a clickthrough of 2.11%. Additionally, the ad's presence on the page correlated to an increase in clickthrough for the original text ad — lifting it to 2.01%.



Model A: The text link "Get A Free Web Account" by itself had the lowest click-through.



Model B: A Call-to-Action ad with a button outperformed the text link, and a combination of both provided the best result of all.

### DRUCKER FOUNDATION

Product Homepage
Metric Feature use
Before 0.00075
After 0.00225
Ratio 300%
Improvement 200%

# **Background**

The Peter F. Drucker Foundation for Nonprofit Management has as its mission "to lead social sector organizations toward excellence in performance." Its website offers application forms for its group associations and conferences, along with articles from its journal and books. The Foundation was started in 1990; its website was launched in 1997. *This case study was included in the report in the 1st edition.* 

### Problems / Goals

Drucker Foundation decided they needed a word change on the homepage. The marketing group thought that "contact us" wasn't descriptive of the function, therefore users didn't use it as much as the team wanted.

#### Solutions

The team tried to change the e-mail link from "Contact Us" to "Feedback."

### **ROI** Measurements

Users' response to the link change was even worse. Information requests via the website went down. After the team calculated the effects of their design change, they switched back to "Contact Us". <sup>20</sup> (The score here is calculated as version 3 – version 2.)

## INFORMATION REQUESTS THROUGH WEB FORM



<sup>20</sup> Using the wording "Contact us," is a recommended guideline (guideline 12) in our book "Homepage Usability" (Nielsen and Tahir, 2002). This case study was completed before the guidelines were published and provides an additional example of the effectiveness of the consistent use of terms across websites. For more information about the usability of presenting information about an organization on its website, please see our report on the About Us areas of websites, http://www.nngroup.com/reports/about

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INFO@NNGROUP.COM



Join Us / Subscribe (this page)



# Join the Drucker Foundation and Help Further its Mission

About the Foundation Nonprofit Innovation Hesselbein Fellows Conferences

Publications **((Leaderbooks** 

Contact Us

Search / Site Map

share this page

Join the Drucker Foundation and help further our efforts. If you share the Drucker Foundation's vision of a society that recognizes the social sector as the leading force in creating healthy and vital communities, and where the social, public and private sectors work in partnership to meet the challenges of tomorrow, become a member and support our work.

#### How to Join

To become a member of the Drucker Foundation, or to make an pline contribution, follow the links below. The Foundation uses me secure payment services of Paypal to accept credit card contributions. Non U.S. members

Individual <u>Join</u> \$75.00 membership Contribution \$ your choice Give Membership Join & give \$75 and your choice and contribution

You can also complete the  $\underline{\text{form}}\text{, or contact the Foundation to}$ make a credit card gift by telephone, or to request a donation

Your commitment to the Drucker Foundation will play a critical role in the Foundation's efforts to serve countless nonprofit organizations by bringing together thought leaders from all three sectors to counsel, educate and mentor the leaders of today and tomorrow.

#### International (non U.S.) Members

Paypal requires you to complete registration before joining. To register, go to paypal.com. Or use our form and fax your payment.

Version 1

Team members

thought this

wording was

problematic.



Join Us / Subscribe



Home

#### Join the Drucker Foundation and Help Further its Mission

**About the Foundation** Nonprofit Innovation Hesselbein Fellows Conferences **Publications** 

The new wording proved less fruitful.

Join Us / Subscribe Feedback Search / Site Map

share this page

Join the Drucker Foundation and help further our <u>Subscribe</u> efforts. If you share the Drucker Foundation's vision of a society that recognizes the social sector as the leading force in creating healthy and vital communities, and where the social, public and private sectors work in partnership to meet the challenges of tomorrow, become a member and support our work.

#### How to Join

To become a member of the Drucker Foundation, or to make an online contribution, follow the links below. The Foundation uses the secure payment services of Paypal to accept credit card contributions. Non U.S. members

Individual membership	\$75.00	<u>Join</u>
Contribution	\$ your choice	Give
Membership and contribution	\$75 and your choice	Join & give

You can also complete the form, or contact the Foundation to make a credit card gift by telephone, or to request a donation envelope.

Your commitment to the Drucker Foundation will play a critical role in the Foundation's efforts to serve countless nonprofit organizations by bringing together thought leaders from all three sectors to counsel, educate and mentor the leaders of today and tomorrow.

## International (non U.S.) Members

Paypal requires you to complete registration before joining. To register, go to paypal.com. Or use our form and fax your payment.

Version 2

#### **IDEALISTA**

Product Website Metric Sign-ups

 Before
 50

 After
 250

 Ratio
 500%

 Improvement
 400%

# **Background**

Idealista is one of the leading real-estate websites in Spain. They deal with sites like msn.es and yahoo.es to provide local real-estate channels in Spain. Idealista's website had about 150,000 monthly users, and 3,000,000 monthly page views. *This case study was included in the report in the 1^{st} edition.* 

## Problems / Goals

Idealista realized that design issues might be causing people to not in subscribe to their newsletter. The newsletter subscription was presented on the old homepage, as a short link to a page that briefly explained the service and asked people to subscribe. There was no example, and the frequency of the newsletter and how to unsubscribe were not explained.

#### Solutions

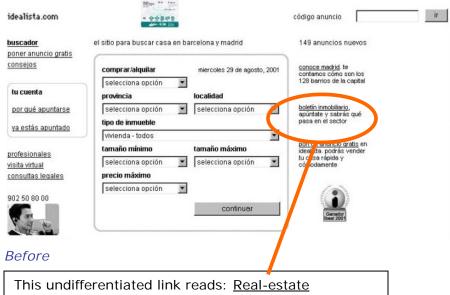
The newsletter subscription link was moved to the bottom center of the page and changed to the more descriptive:

"Real estate newsletter: get the market news every Friday in your email, type email\_\_\_\_\_\_ subscribe unsubscribe"

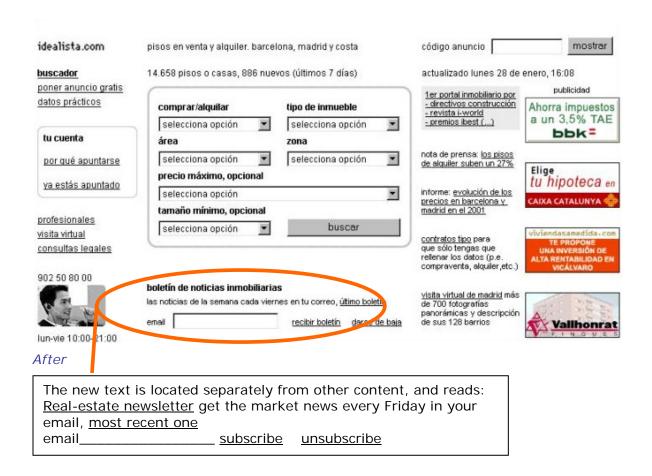
### **ROI** Measurements

Before – every week about 50 people signed up for Idealista's newsletter.

After – every week about 250 people signed up for Idealista's newsletter.



This undifferentiated link reads: <u>Real-estate</u> <u>newsletter</u> Sign up to be on top of what's going on in the market.



# **KAMAT'S POTPOURRI**

Product Website navigation

Metric Feature use Before Confidential After Confidential

Ratio 500% Improvement 400%

## **Background**

Kamat's Potpourri is a content-rich, personal website that showcases the works of a family. It is a hodge-podge of Indian history, arts and culture, with content ranging from prehistoric rock paintings to documenting contemporary communities. *This case study was included in the report in the 1<sup>st</sup> edition.* 

### Problems / Goals

Most visitors either never knew there was a navigational toolbar at the bottom, or did not use it because of its poor usability. Therefore, the goals were to redesign the navigation bar, and create a help link that didn't require an extra click.

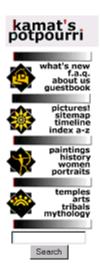
## Solutions

The team changed the horizontal toolbar into a vertical one, which caused an immediate increase in their use. They removed the link to the search engine and allowed users to type their search queries directly from every page on the website.<sup>21</sup>

<sup>&</sup>lt;sup>21</sup> Adding a consistent search box on each page is recommended as design guideline #47 in our book *Homepage Usability: 50 Websites Deconstructed* (Nielsen and Tahir, 2002). This case study was completed before these guidelines were published, and provides an additional example of the effectiveness of consistent design and users' frequent use of the "Search" feature.



Before: Most users missed the horizontal navigation bar at the bottom of the page.



After: The navigation bar is a vertical list, and includes a field for users to type in search queries.

# **ROI** Measurements

Search usage went up by 400%.

## ADOBE KULER (KULER.ADOBE.COM)

Product Color-theme Sharing Site
Metric Number of comments
Before 6 per day (average)
After 37 per day (average)

Ratio 617% Improvement 517%

# **Background**

Adobe kuler is a Web application in which users create, share, rate, and discuss individually designed color themes, which can be exported for use in projects and applications, such as Web design, graphic design, interior design, or arts and crafts. This case study was included in the report in the 3<sup>rd</sup> edition.

## Problems / Goals

Although users engaged with most features on the site, very few were using the commenting feature. The site was a highly stylized Flash design employing some non-intuitive conventions, such as depicting the number of comments as a series of blocks below the comment area (when users clicked a block, the comment was displayed). Only one comment was displayed at a time. The button for posting a new comment was small and not clearly labeled.

#### Solutions

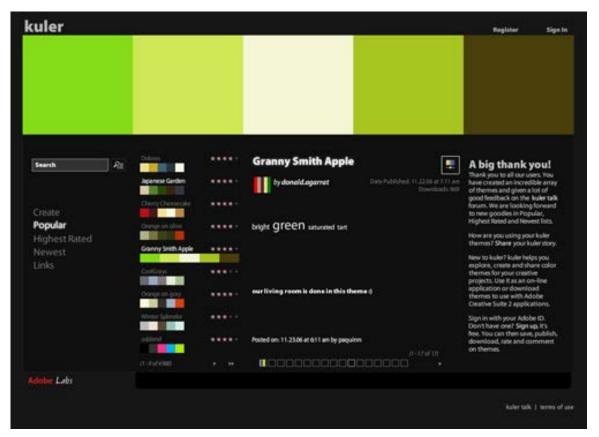
A common-sense approach prevailed in redesigning the feature to more familiar parameters.

- The button for posting a comment was enlarged and moved to a prominent position.
- The original comments button had only a "plus" sign to indicate its function. The new version states "Add a comment" in large, easily readable type.
- Comments were changed so that they appeared as a list in a scrolling box. Each comment was preceded by the user's avatar (which consists of one of the user's color themes).

#### **ROI** Measurements

Familiarity does not necessarily breed contempt in Web design. Unless a feature offers entirely new functionality or much improved intuitive use, it is often better to stick with a conventional delivery.

Prior to the redesign, the number of comments per day averaged six. In the month after the redesign, the number of comments per day averaged 37. Over the following six months, commenting rose still higher, averaging more than 60 per day in the second half of that period. Overall site traffic rose only 7% during the same period, so the vast majority of the increase is attributable to the design change.



Before: Users did not notice the comments button, indicated with a small "plus" sign.



After: The large button labeled "Add comment" led to a dramatic increase in the number of comments posted.

#### **MICROSOFT OFFICE**

Product Office Online Article Ratings

Metric Rating response Variant A 100% (baseline)

Variant B 220% Variant C 795% Difference, A to C 695%

## **Background**

To assist users of Microsoft Office, the Office Online website (<a href="http://office.microsoft.com">http://office.microsoft.com</a>) provides a search entry-point for help queries. In addition, recent versions of Office (e.g., Office 2003 and 2007) provide a "better-when-connected" experience, where help queries from the Office clients applications (e.g., Word, Excel, Powerpoint) can be answered by the Office Online service so that users can get up-to-date help articles and so that editors of these articles can get feedback and improve them or add new ones. This case study was included in the report in the 3<sup>rd</sup> edition.

#### Problems / Goals

Users are asked to rate the articles, and several alternatives for rating widgets were experimented with from a five-star system to yes/no/I-don't-know. A text box for free-form input was also available with a submit button, but the timing of its appearance varied as described below.

#### Solutions

Three variants of the feedback form were tested.

- Variant A showed an unlabeled five-star rating system and a text box labeled "Tell us why you rated the content this way (optional)." The free-form text box appeared below the five-star rating as shown in the figure below.
- Variant B presented visitors with a five-star rating option labeled from "Not Helpful" (one star) to "Very Helpful" (five stars). When a visitor clicked on a rating, a text box was then served asking "Why did you rate the information this way?"
- Variant C showed yes/no/don't know buttons, but added three customized text box responses served when the user clicked on one of the ratings. Each text box was tailored to the response — "How was this information helpful?", "How can we make this information more helpful?" and "What are you trying to do?"

The third variant significantly outperformed the others.

### **ROI** Measurements

Because of Microsoft's extremely high traffic, it's possible to make some very credible inferences about the how the layout of the feedback function influences response rates. Three variants of the feedback form were tested, and each was viewed more than a million times. Working from an arbitrary baseline value of one for Variant A (the actual response rates were normalized for confidentiality), the success rate for the three approaches compare as follows:

Α	В	С
1	2.21	7.95

The clear message here is that for increasing response rates, simplicity makes a big difference.

Variant A allowed visitors to rate the page from one to five stars, with an optional text box for comments. Variant B was more than twice as successful. The major difference between the two approaches is the removal of the text box, which in B is displayed only after a rating has already been selected. B also more clearly explains the rating system.

Even though the text box is clearly labeled "optional" in A, its very presence appears to increase the psychological investment required for a visitor to click a rating. Furthermore, the presence of a "submit" button confuses the layout, since it's not clear that the button only applies to the text box. Rating data is collected as soon as a user clicks a star.

Variant C offers just three text-based responses and only serves a text-entry box after the click. The numbers here couldn't be clearer — yes/no/don't know vastly outperforms both of the five-star systems.

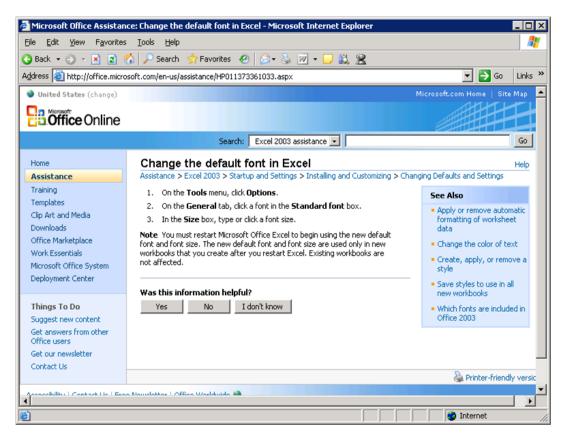
Variant C offers three simple choices (yes, no, and I-don't-know) to a clearly worded question: *Did this help?* By the time they get to the feedback function, users already know the answer to that question.

In contrast, rating a page on a scale of one to five requires some thought, both to understand what's being asked and to formulate a response. This isn't rocket science, but it takes a much greater investment than answering a yes-or-no question — about 3.59 times greater, to be precise.

As with every design, context matters. Help articles tend to either solve the problem or they don't, so a simple yes/no button suffices; for retail products, a five-star system might be more appropriate, as the effort that users are willing to make me be higher.

In addition to the specific lesson about the rating widget in this context, the trial also highlights the value of testing different UI designs; small changes can make a big difference.

For more examples of controlled experiments, a practical guide, and papers by Microsoft's Experimentation Platform team, see <a href="http://exp-platform.com/nngroup.aspx">http://exp-platform.com/nngroup.aspx</a>.



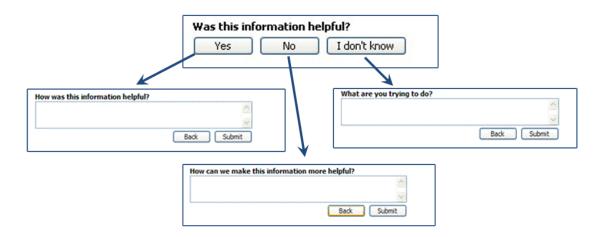
Before: Microsoft Office Help pages ask users to rate the helpfulness of the content.



Redesign, Variant A displayed a five-star rating system and an optional text box.



Redesign, Variant B (showing the two stages of the rating area, before and after the user has assigned the star rating)



Redesign, Variant C (showing the two stages of the rating area: an additional question is shown, depending on which of the three buttons the user clicks)

# MEMPHIS COLLEGE OF ART (ODEN MARKETING AND DESIGN)

Product Website

Metric Users filling out information request form

Before 0 After 200

Ratio Infinite (coded as 1000%)

Improvement 900%

# **Background**

Headquartered in Memphis, Oden Marketing and Design is a marketing communications firm that provides services to clients from the Fortune 1000.

Memphis College of Art was founded in 1936 and is one of only three independent, regionally and nationally accredited art colleges in the South — the only one that offers a master's program. Students attend from approximately 35 states and 11 foreign countries to earn BFA and MFA degrees in design and the fine arts. This case study was included in the report in the 1<sup>st</sup> edition.

### Problems / Goals

Memphis College of Art had turned to Oden Marketing and design to help them update and refine their website. The old MCA website was extremely text-heavy, and had not been updated since 1996. MCA believed competing art schools had stronger Web presences. One of their main concerns was that international students were first exposed to MCA via the Web, which made their Web presence critical to their recruitment.

### **Solutions**

Oden Marketing created a new design for the MCA website. In addition to the visual change they brought a lot of content to the homepage, including current school information, courses of study, and artwork.

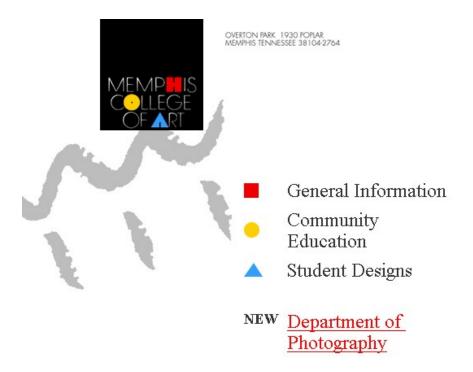
### **ROI** Measurements

After the redesign, there was a tremendous increase in the amount of college inquiries (12,979 downloaded files after redesign vs. 0 before the redesign). Users filled out the information request form (approximately 200 per month since redesign; 0 before) and downloaded application information for processing.

The project cost \$67,000 and resulted in an annual savings of \$90,000 in postage alone.

Furthermore, the increased traffic is estimated to have resulted in \$704,400 in new revenue per year due to increased student matriculation, based on tuition costs of \$11,470 and a total of 60 new students.

The combined gains (savings plus new revenue) is 1,190% of the investment, for a ROI of 1,090%. More realistically, ROI would be smaller in a commercial calculation because there is some marginal cost associated with providing an education to more new students.



eMail: | ADMISSIONS | WEBMASTER |

Before: The homepage had very little information and the visual design was outdated.

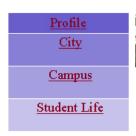


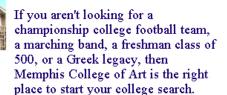
After: The new homepage has an updated look and feel, and provides links to many specific topics on the website.

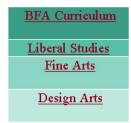


<u>HOME</u>

### INTRODUCTION







There are lots of things we don't have at Memphis College of Art. We don't have huge classes or instructors who teach your class then quickly disappear to their studios. We don't have unapproachable staff members who take appointments to see you three weeks in advance. We don't have teachers who don't know their students' names.

Before: The information page was very text heavy and this visual design did not appear to be professional quality work.



After: The new information page features both text and images to convey the school's brand, as well as a sophisticated, modern appearance.

#### **SCANDINAVIAN AIRLINES**

Product Information Page Metric Clickthroughs

Ratio 1406% Improvement 1306%

# **Background**

Like most air carriers, Scandinavian Airlines books much of its travel online, through its website at flysas.com. After booking, the final confirmation page includes detailed information on times and flight numbers. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

### Problems / Goals

As part of the confirmation page, the airline wanted to provide users with an informational page designed to make travels go smoother, including information on baggage, security and similar tips. Users were alerted to the page by a banner button which says "Get a good start to your trip." Since the airline has a vested interest in savvy, prepared travelers (who require less customer service), the designers wanted to encourage more customers to check out the tips page after reviewing their details.

#### **Solutions**

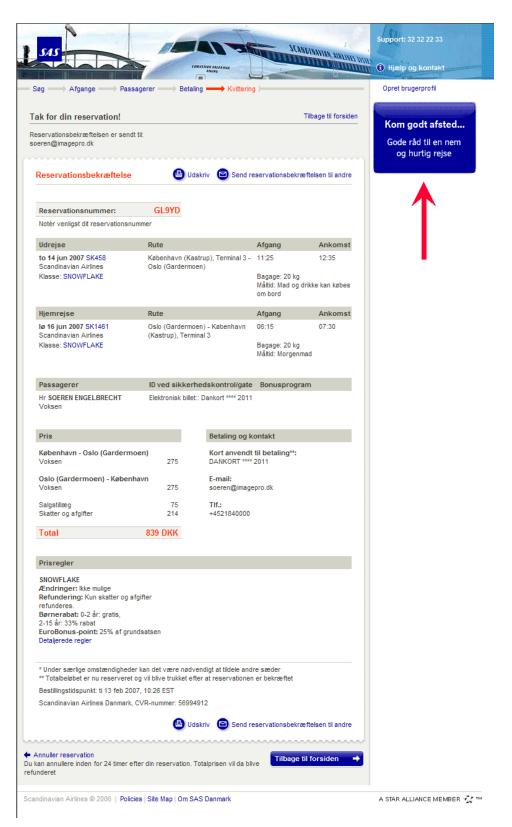
In the original design, the banner was placed on the top right corner of the confirmation page, well above the fold. The confirmation details were fairly extensive and important to users, so by the time they finished reviewing the information, the banner had disappeared off the top of the page. The designers moved the button to the bottom right corner of the page.

### **ROI** Measurements

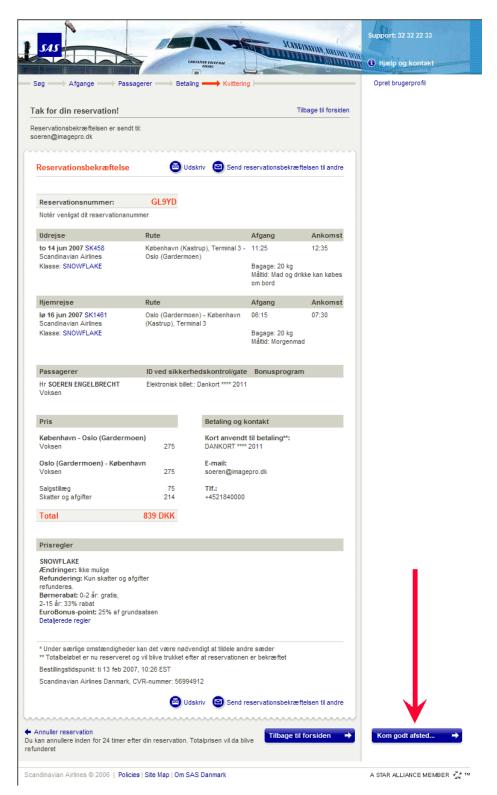
Clickthroughs soared by more than 1300% after the change. The new button offered two major advantages.

First, it caught customers at the bottom of the page when they were preparing to leave. This approach doesn't always fit a website's profile, but it's especially effective here, since the visitor is highly motivated to read the entire page.

Second, the button's shape and size were made to conform to other navigation buttons on the page, making it look less like an advertisement and more like a natural progression through the site.



Before: The "Get a good start to your trip" button was placed at the top of the page. (the arrow has been added to point out the feature under discussion)



After: Many more users clicked the button for additional information when it appeared at the bottom of the page. (the arrow has been added to point out the feature under discussion)

## SHELTER.ORG.UK (ENGLAND AND SCOTLAND)

Product Navigation

Metric Increased feedback from survey page

Before 27/month
After 406/month
Ratio 1503%
Improvement 1403%

# **Background**

Shelter is a housing advocacy organization founded in 1968. Its website, Shelter.org.uk, serves people with housing problems, ranging from financing and repairs to neighborhood issues and homelessness. The site offers a variety of informational resources and online tools for people with any sort of housing issue and also provides an online venue for fundraising. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

#### Problems / Goals

The site solicits visitors to fill out a detailed survey form, which provides Shelter with information about housing issues as well as collecting feedback about the website design. Navigation to the survey page consisted of a graphical banner link on the right side of each content page. Several banners are featured in the right column, of varying depths.

#### Solutions

The site designers moved the survey solicitation banner from the right side of the page to the bottom of the content section. Context field depths vary, generally running between 1,000 to 2,000 pixels deep.

By placing the ads at the bottom of the page, visitors are solicited to respond at the optimum moment — when they have finished reading the page, a natural break point. Additionally, the new banner (365  $\times$  67) was more than twice as wide as the right-column banner.

More importantly from a navigational standpoint, the newly repositioned banner has no competition from other graphical links or menus. In nearly every case, the banner is positioned below the fold. All other navigational options are above the fold, so the visitor is strongly guided to click on the banner.

At the bottom of the page, after the content, there is also a psychological benefit. The ad is presented to visitors' eyes at a point when they might otherwise exit the site — a natural moment at which to evaluate user experience. A tweak to the wording — from "Have your say" in the original to the much more engaging "Did you find this useful?" in the redesign helps further exploit the exit psychology of the new placement.

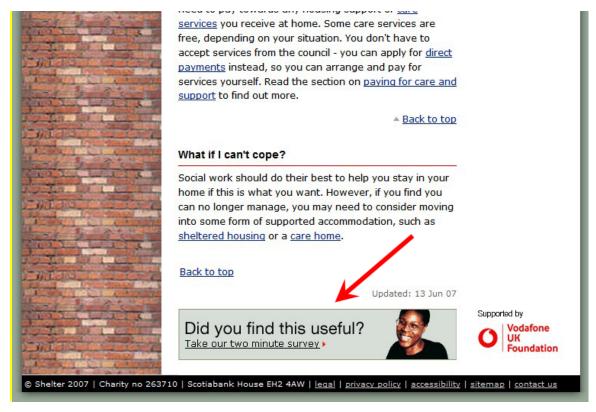
# **ROI** Measurements

In April 2006, under the original design, 27 visitors completed the survey — in keeping with the normal monthly response, which hovered around 20 and 30 responses. In May 2006, after the redesign, 406 people completed the survey — an increase of about 1400%. Responses have continued to be relatively steady since the change was implemented. Traffic to the overall site increased only modestly during

the same period, which suggests the design change accounts for most of the improvement.



Before: The survey call to action appeared on the right side of the page (the arrow has been added to point out the feature under discussion.)



After: The survey link appears at the bottom of the content area, leading to an enormous increase in the number of participants (the arrow has been added to point out the feature under discussion.)

## **COOL SITE OF THE DAY**

Product Added feature

Metric New sign-ups per day

 Before
 3

 After
 200

 Ratio
 6667%

 Improvement
 6567%

# **Background**

Since its beginning in 1994, Cool Site of the Day has remained a unique Internet guide that features great sites and good deals on the Web. *This case study was included in the report in the 1st edition.* 

# Problems / Goals

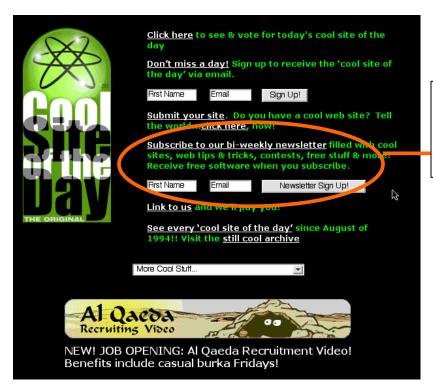
Cool Site of the Day decided to redesign their homepage in an effort to entice more people to subscribe to their daily newsletter.

## **Solutions**

The in-house team at Cool Site of the Day made two main changes to the homepage: they added a more prominent sign-up form and a pop-up dialog designed to automatically subscribe those who click OK.

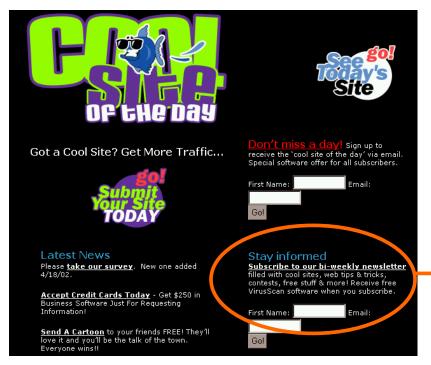
#### **ROI** Measurements

Before the change, Cool Site of the Day was getting an average of three new signups per day; after the change, sign-ups per day rose to 200.



The original subscription area was in the fourth paragraph on the homepage.

## **Before**



The new sign-up area was differentiated from other text on the page (and other sign-ups).

After

# **Metrics Category: User Performance**

## WEBJUNCTION (FORUM ONE COMMUNICATIONS)

Product Website

Metric Customer satisfaction

Before 90%
After 90%
Ratio 100%
Improvement None

## **Background**

WebJunction is a site offering news, resources and community forums for library workers. Its offerings include online classes on topics such as language and digital technology, library financing information, services used by libraries, guides to Web deployment, Web conferencing, a blog and more. It outsourced its redesign to Forum One Communications, a web design and development group that works principally with influential public sector organizations. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

### Problems / Goals

The design team identified several areas in need of improvement. The visual design of the site had an antiquated feel, not appropriate for a site so focused on technology and information management. Only one element on the cover was frequently updated (weekly tips). Navigation was unclear, and features such as search and login were too difficult to access (requiring clicks off the front page, among other issues).

## Solutions

A complete redesign (dubbed a "refresh" for branding purposes) overhauled most of the site's features.

- The new design was cleaner and more current, replacing Verdana header elements with Trebuchet and Georgia, for a more professional look.
- Top of the page navigation converted from an awkward tabbed layout with wordy, unclear labels to broad, concise topic headings that more effectively guide users to content. More specialized sections — such as "Patron Services" and "E-Learning Institute" — were folded into the more user-friendly headings of "Resources" and "Courses" respectively.
- "Help" and "About Us" links were promoted to the main navigation.
- Community features, always popular, were moved to the right column, where they are more prominently featured.
- In addition to weekly updates in the lead content position, three columns below the lead are rotated weekly to keep the content fresh. A library blog feed is featured in the content area, as well as member spotlights.

- Graphics were simplified and upgraded. Previously the front page was cluttered with generic clip art; the refresh used one lead art element tied to a feature, and a picture accompanying the member profile.
- A search bar was added to every page for quick, easy access. A log-in link
  was also added to every page, and the front page featured a log-in form,
  allowing members to sign in immediately after arriving at the site without an
  additional click.

#### **ROI** Measurements

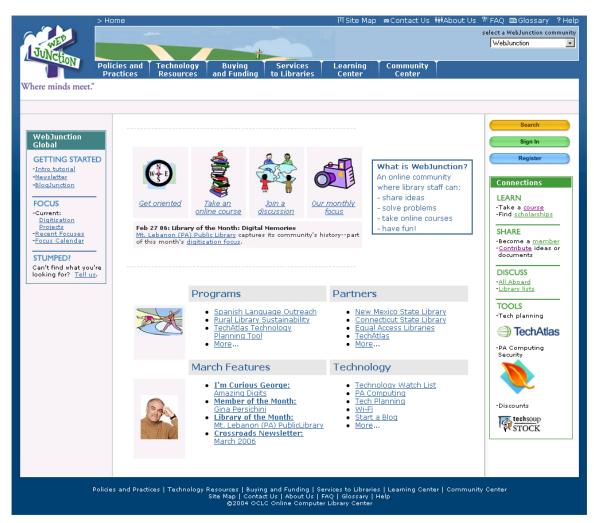
Despite the fairly wide-ranging changes, user satisfaction as measured by survey remained level at 90% (users were not asked to comment specifically on the redesign). Given the nature of the site — which caters to a very specific audience with very specific tools — that isn't entirely surprising. Users of niche sites tend to know what they want, and a cosmetic facelift isn't necessarily going to shift their perspective. Also, 90% is already a very high satisfaction level, so it would require a very substantial effort to drive this number even higher.

However, traffic patterns did start to reflect some of the changes, particularly key features such as member log-in and depth of visit. Number of visits increased 4% in the three months following the redesign, compared to the preceding three months. Average depth of visit increased from 3.9 pages to 4.2.

Unique visitors for September 2007 rose 18% from September 2006 (before the redesign). Given the seasonal nature of some libraries, that comparison is likely more representative of the actual impact of the redesign.

The strong focus on community features and enhanced placement of the log-in feature appeared to show the strongest result. The number of registered members increased 45% from September to September, and course enrollments increased 40%.

In terms of information architecture, site traffic became more focused to the designer's intention and the site's most important features. Usage of community features, such as member groups and forums, increased substantially, as did newsletter signups (now featured prominently on the home page) and use of the search function.



Before: The visual design of the site was outdated and the homepage content did not change frequently.



After: Modern fonts and graphics contributed to a more current look and feel, and the top featured content area was changed to a regularly updated story.

#### **CAPITAL ONE**

Product Web Portal Metric User satisfaction

 Before
 71%

 After
 88%

 Ratio
 123%

 Improvement
 23%

### **Background**

Among its various financial businesses, Capital One has more than 10,000 employees who use its "My One Place" intranet portal. Its highly functional portal design won it a place on Nielsen Norman Group's Ten Best Intranets of 2006. *This case study was included in the report in the 3<sup>rd</sup> edition.* 

#### Problems / Goals

An ongoing project to improve the usability of the "My One Place" portal took user satisfaction from 49% to 71% from September 2004 through May 2005. The goal was to lift that figure to 80% by the end of 2005.

A survey asked users to identify features they would like to see added to My One Place. At the top of the list was an automatic log-in function. Users were required to log in every time they entered the portal, including if they opened a new browser window or a hosted application. The obstacle was highlighted by the fact that intranets run by Capital One subsidiaries did not require repeated verification.

#### **Solutions**

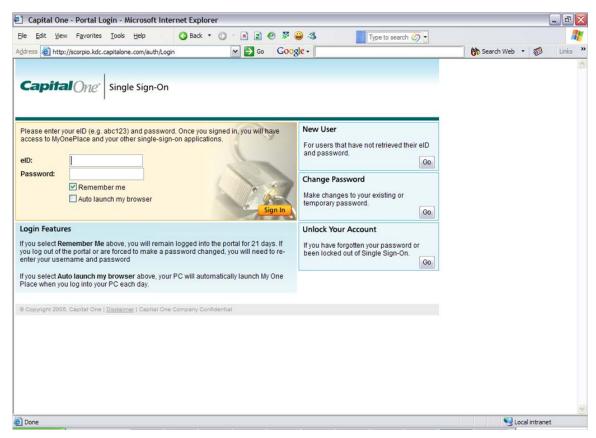
The design team implemented "Speedpass," an automatic log-in function. Users are only required to log in once every 30 days on the same computer, regardless of browser sessions. Users can also opt to have a browser automatically open and log into My One Place as soon as they boot the computer. Speedpass also covers single-sign-on applications within the Intranet, eliminating another layer of authentication.

The major interface change involved in implementing Speedpass is the addition of checkboxes for "Remember me" and "Auto launch my browser," enabling users to control their login experience.

#### **ROI** Measurements

By the end of 2005, Speedpass had been rolled out to 3,900 intranet users. Another survey revealed that user satisfaction for Speedpass users rose to 88%, significantly exceeding the target. For users without Speedpass, satisfaction lingered at 67%.

The average number of pages per user per day also rose from about six to 8.4. So in addition to achieving the targeted increase in satisfaction, the log-in change also accomplished the more important goal of removing an obstacle to usability. As a result, employees with Speedpass accessed the intranet an average of 40% more each day than those without.



After: The ability to remember login information (so that users did not have to login each time they visited) increased employee satisfaction with this intranet by 23%.

#### UNIVERSITY OF EDINBURGH

Product Website Content Management System
Metric Average Task Time (in seconds)
Ratio (original to final) 133%
Improvement 33%

## **Background**

The University of Edinburgh offers an online content management system interface which allows content contributors to build web pages. The team in charge of this tool had been primarily focused on adding functionality, but following a survey of the user group and feedback from those responsible for training content contributors, the team decided to address the usability of certain key existing features. *This case study was included in the report in the 4<sup>th</sup> edition.* 

#### Problems/Goals

The original interface for building web pages was very basic, with little visual distinction between the content and the page background; and a repetitive,

cumbersome workflow. For example, contributors could only add new content elements at the very top or very bottom of a page. To position a new element in the center, they had to move it above or below nearby elements one step at a time using "Up" or "Down" buttons. Since a typical webpage consists of 10 to 30 elements, this process quickly became onerous.

The goals of this redesign were to

- Reduce the number of clicks required to:
  - o insert an element midway through a page
  - o reorganize the layout of a page
- Reduce the time required to build or re-edit a page
- Improve the scannability of content in a page
- · Reduce the risk of accidental deletions when elements are being reorganized

#### Solutions

The new interface allows contributors to more easily insert elements at a particular location and move elements around on the page.

All the content elements on a page are identified by a number, and when creating a new element, users can insert it before any specific numbered element. Also, an existing element can be moved in just two steps, by selecting its checkbox and clicking the "Move Here" buttons in the desired destination.

Another benefit of the new design is that it places the "Move here" and element numbers on the left side of the page, isolating the "Remove" button on the far right. This reduces the risk of an element being removed accidentally.

### **ROI** Measurement

To evaluate the effects of the design changes, a small group of experienced users attempted a series of representative tasks using the original interface. About six weeks later they undertook the same tasks using the new interface.

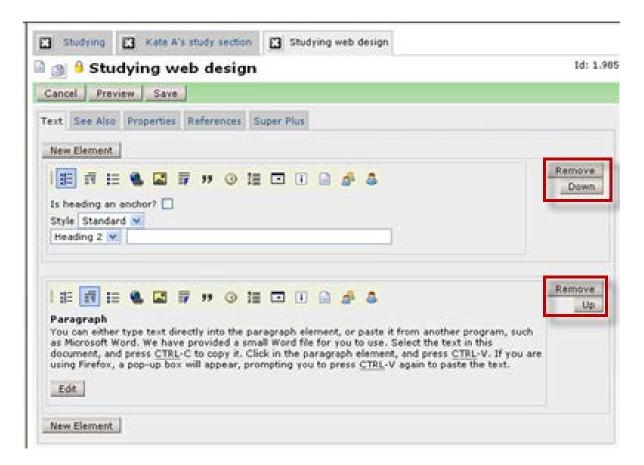
In both studies, participants used a provided timer to time themselves completing tasks.

Task	Averag	ge Time Ratio		Improvement	
Task	Before	After	Ratio		
1. Quote/feature box	140.0	91.0	154%	54%	
2. Paragraph/bullets	121.5	92.2	132%	32%	
Insert include article element	78.25	61.0	128%	28%	
4. Create new article	804.75	679.40	118%	18%	
Overall			133%	33%	

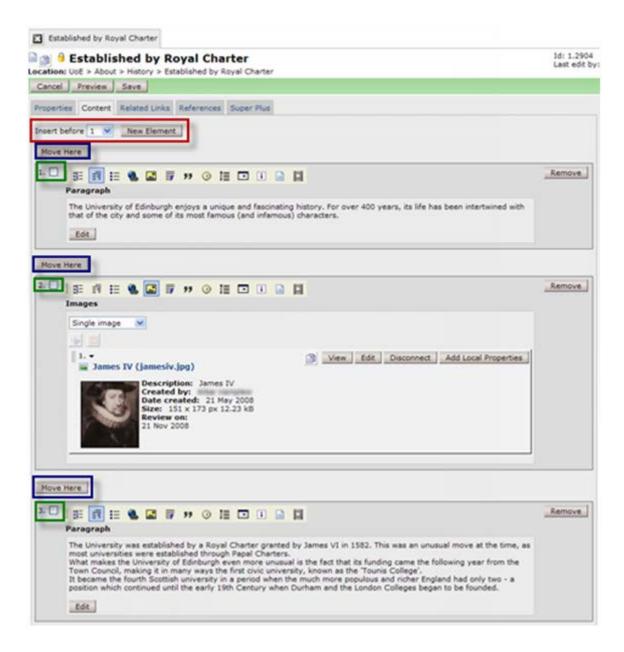
Since these testers had only just begun to use the new interface, their performance will likely continue to improve, further increasing the average time savings.

For the evaluation purposes, participants received prepared content to use for the "Create new article" task. In reality, however, many contributors do not organize their content in advance and instead tweak the content once it's in the content management system. Therefore, actual time saved on producing new web pages is likely to be even higher than reported here.

These changes are estimated to save between 3,688 and 4,610 hours annually. Put in monetary terms, the estimated annual savings (based on a clerical grade hourly rate of £13.50) is between £49,788 and £62,235, (or \$80,228 to \$100,285 USD.)



Before: Page elements could only be moved through a series of multiple steps, repeatedly clicking the "Up" or "Down" button on the far right.



After: Users could reorder page elements to any vertical position in just two steps- by selecting the checkbox for the item to be moved, and clicking the "Move Here" button in the appropriate destination.

## ANONYMOUS ELECTRICITY COMPANY

Product Confidential Metric Completion rate

 Before
 0.63

 After
 0.91

 Ratio
 144%

 Improvement
 44%

## **Case Study Summary**

One of the features on the electricity company's website was an online survey. Unfortunately, people were not completing the online survey correctly and fully, which caused data problems and more work for the telephone customer service staff.

New features were added and navigational changes were made to encourage completion of these tasks.

The key success is that survey completion rates have improved greatly, delivering the full benefit of the site to more users. For other metrics and more details on this project see the full discussion in the Feature Use Metrics section. This case study was included in the report in the 1<sup>st</sup> edition.

## NORTH CAROLINA STATE UNIVERSITY

Product	Article Search
Metric 1	Task success
Before	0.53
Model A	0.61
Model B	0.89
Ratio Model A	115%
Ratio Model B	168%
Improvement A	15%
Improvement B	68%

Product	Article Search
Metric 2	Task time
Before	339
Model A	236
Model B	219
Ratio Model A	144%
Ratio Model B	155%
Improvement A	44%
Improvement B	55%

#### Background

The North Carolina State University library system offers various online tools to search the archives and find journal references. Users were given the choice between searching academic journals and narrowing the search to specialized databases, organized by a wide variety of categories and criteria, including source, general type of publication, citation information and topic. The university created a usability task force to evaluate the site, test alternative configurations and recommend solutions. This case study was included in the report in the 3<sup>rd</sup> edition.

#### Problems / Goals

Under the original design, users were taking too long to complete searches. User testing showed users completing assigned article-finding tasks on the site barely half of the time. The testing identified several specific usability problems.

• The site's "find articles" page contained a search tool and links to additional search tools. Users gravitated to the search tool on the search page, in part due to predictable inertia and the magnetic attraction of any type-in field and

- in part because the descriptive language for the additional tools was not sufficiently clear.
- Search forms included drop-down menus sometimes multiple drop-downs
   — that further refined which search tool was being employed. Users selected
   from the drop-down lists at random, usually resulting in a critical obstacle to
   task completion.
- Tool labeling did not correspond to the usefulness of the tool. As a result, users were inclined to select a less useful tool when a better one was available.
- The language describing the types of searches offered was not sufficiently descriptive.

#### **Solutions**

User testing evaluated two different approaches to the collection of search tools. Users were evaluated on average task time in seconds and task completion (one for a completed task and zero for a failed task).

Design	Average task time	Average task success
Original site	339	0.53
Model A	236	0.61
Model B	219	0.89

In this project, the same version (Model B) was superior on both of the measured usability attributes. Thus, B is clearly better than A. Not all studies have this simple outcome. Sometimes you will find that one design wins on one metric whereas another design wins on another metric. In this case, you have several options: The optimal approach is often to produce yet another design, taking the best aspects of both contenders. If you don't have time for an additional iteration, you might decide that one of the metrics trumps the other (for example, sales may be more important than anything else for an e-commerce site). Alternatively, you sometimes find that one design was a huge win on one metric whereas the other design was marginally better on the other metric. In that case, you would pick the first design and suffer a small degradation on the second metric in order to gain the big improvement on the first metric.

Model A included more direct access to the search tools offered by the site, with a front page divided into two different approaches, including direct access to the "Citation Linker" tool on the right hand side of the page. The latter tool was particularly problematic in the usability testing — users had a tendency to indiscriminately enter search terms into the highly specific fields, often searching for a nonfunctional term and searching into a database with a very limited scope (academic journals). This tactic frequently resulted in a failed task.

Model B significantly outperformed its competitors in both time and rate of completion. Using simple text links, the navigation steered users based on the type of information they wanted to find. The search tools themselves were located on inside pages — users had to make determinations based on the content they sought before getting access to a tool.

In most of the other designs this project team examined, success generally corresponded to reducing the number of clicks to a goal. In this case, the opposite dynamic applied.

The library system offers several different search appliances, the parameters of which are often dictated by outside vendors. Testing found that users had a strong tendency to use the first tool they were presented with — whether or not it matched the data set they were supposed to be searching. Because of that factor, whatever disadvantage the extra clicks created was outweighed by the advantage of preventing errors.

However, the final design did not entirely reflect the usability results. (The final design was actually a redesign of the usability study's recommendation.) Although the redesign did add text guidance to steer visitors to the correct tool, it continued to include the Citation Linker on the front page.

In part, the decision keep Citation Linker on the Find Articles page was motivated by testing results that found reduced success rates for a couple of very specific tasks. However, the placement of the tool continues to result in error responses.

Despite the retention of the Citation Linker, the new design did adopt other strategies that reflected usability concerns.

For instance, rather than simply pointing users toward "Google Scholar," the front page provides a link to the tool but also describes the type of content that the search will provide — "scholarly articles, conference papers, technical reports, books" — bringing more useful content to the surface.

Additionally, a small box in the lower right provides tips and links to more detailed instructions on how to use the system. A dropdown at the bottom of the page offers a selection of more specialized databases.

# Welcome to the NCSU LIBRARIES



#### services

- Accessibility
- Ask a Librarian
- Borrow / Renew
- Centennial Campus Services
- Copyright Issues
- Course and E-reserves
- Distance Learning
- FAQ
- Instruction
- LOBO
- Request Items / TRIPSaver
- Research Assistance
- Suggest a Purchase
- More Services ...

#### about the libraries

- Branch Libraries
- Departments
- Directions, Parking
- Fellows Program
- Friends of the Library
- Hill of Beans Coffee Bar
- Hours, Phone Numbers
- Jobs
- News and Publications
- NC State Staff Directory
- Organization & Planning
- Policies
- University Library Committee
- . More about the Libraries...

Find Books, Journals, and Other Materials in the Catalog Go

TITLE beginning with... Other search options.

Find Articles, Data, and more ...

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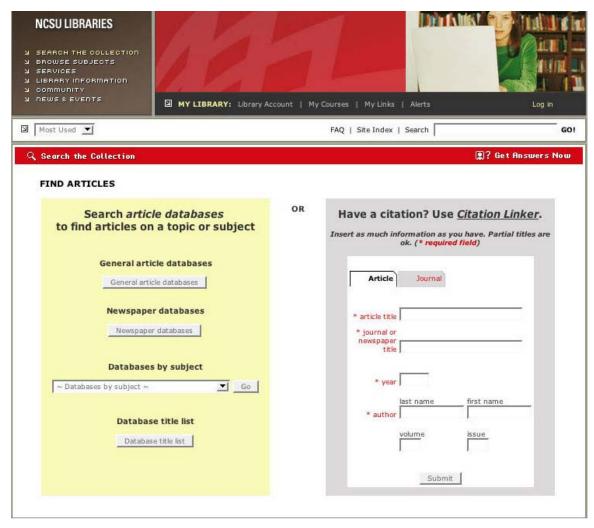




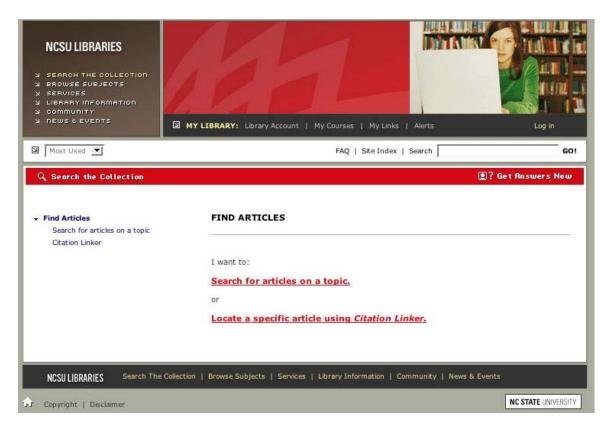
Visual Resources Librarian to Join Harrye B. Lyons Design Library

- Special Collections Research Center Makes Three Key Appointments
- Renovations Underway in the East Wing of the D. H. Hill Library
- Elsevier: Continuing Status Report

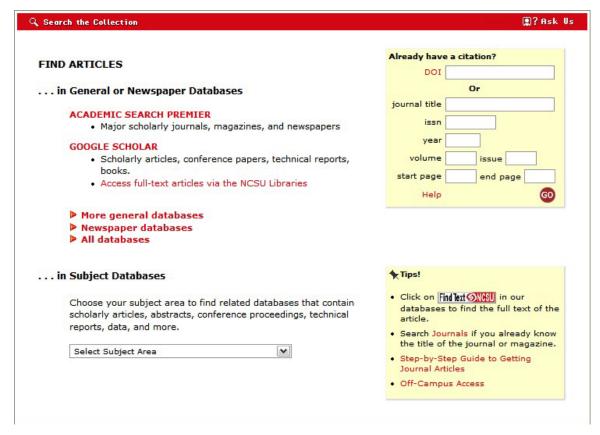
Before: Library users gravitated towards only field on the page, missing other article search tools.



Model A: This version presented several different article search tools on a single page; users had difficulty using the "Citation Linker" because they often entered information in the wrong fields.



Model B: Because users tended to use the first tool they saw, whether or not it was appropriate, this design which guided them to the correct tool proved to be the most effective and efficient.



Final Design: This approach presented several different resources, but included text descriptions to help users decide which tool would be most appropriate.

## SARAH HOPKINS (ARTIST)

Product Website

Metric User satisfaction

Before 44% After 78% Ratio 177% Improvement 77%

## **Background**

Artist Sarah Hopkins uses her website (<a href="http://www.sarah-hopkins.co.uk/">http://www.sarah-hopkins.co.uk/</a>) as a publicity tool, to display her work and contact information, and to generate sales and leads from art galleries and collectors. In addition, the artist is now included in some British school curricula, so a segment of the audience includes students between the ages of 14 and 16. This case study was included in the report in the 3<sup>rd</sup> edition.

#### Problems / Goals

A user satisfaction survey yielded only a positive rating of only 44%. After three years online, the site had produced no leads. A complete overhaul was entirely appropriate.

The original design was wide (having been created with lower screen resolutions in mind). A lot of room separated the menu selections; the page heading was deep and mostly empty space.

#### Solutions

- The deep, empty header (a scaling table) was replaced with a simple pattern, representative of the artist's thematic focus. The previous header featured a similar graphic element extracted from the artist's work, but most of it was hidden behind a solid-color table cell.
- The spread-out navigation menu in the old design was problematic; it was replaced with a simple, intuitive set of text links flush to the left. The flush-left format puts the menu in a dominant eye-tracking location and requires less mousing around, because the selections are closer together.
- When clicking to an inside page, the original design presented a horizontal submenu. The redesign duplicated the improvement of the main menu, serving submenus as a tight unit of vertical text links for more economical mouse tracking.
- The menus in the original design were set in small type against a shaded background, set off from the main content in another table. The new menus are large, dark text on a white background, standing out much more prominently. Breadcrumbs were added to improve the viewer's sense of navigation and location.
- The old design features two competing, equally weighted text boxes in the body area. This has been replaced with a single text box, reducing viewer confusion and making the layout more amenable to screen readers. This is complemented by a much simplified page structure, eliminating multiple, visible table cells that gave the site a blocky appearance and replacing them with a unified content area.

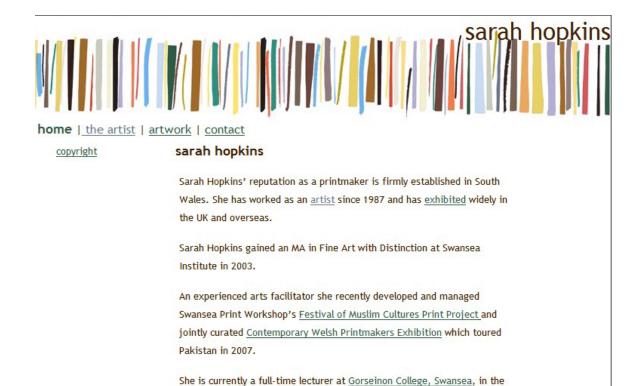
#### **ROI** Measurements

User satisfaction surveys were conducted before and after the redesign, asking 58 respondents to give a rating from one to five. The results showed an increase from 44% positive to 78%. In a few short months since the redesign, the site has begun to generate leads from art buyers and galleries, compared to no leads in the almost three years preceding. Exact numbers were not disclosed, but any comparison against a three-year average of zero makes for a pretty good comparison. Exits from the home page also declined by 50%, likely driven by the menu changes.

(The leads metric is included in the Conversion Rate/Sales section of this report.)



Before: The original design had a great deal of empty space at the top of the page, between navigation options, and within the body of the page. This design had low satisfaction ratings.



now viewing: sarah hopkins | home page

copyright

After: The new design condensed the navigation into a smaller area and presented the main page content as a central block of text. This design had much higher user satisfaction ratings and also began to generate leads.

## SUN MICROSYSTEMS: JAVA WHITE PAPER

faculty of Creative Arts.

Product White page design Metric Score on exam Before 0.33
After 0.65

Ratio 197% Improvement 97%

## **Case Study Summary**

The redesign goal was to rework existing pages to enhance reading speed and efficiency. The new versions of the Web white paper included text that was more scannable, concise, or objective (rather than promotional) in style.

For the full report about this case study see the next entry. This case study was included in the report in the  $1^{st}$  edition.

#### SUN MICROSYSTEMS: JAVA WHITE PAPER

Product Java White Paper Metric Task time in seconds

 Before
 637

 After
 315

 Ratio
 202%

 Improvement
 102%

## **Background**

Complex business-to-business (B2B) products often lead to complex pages with descriptions that are overly hard to read, especially online. A focus on content usability can significantly enhance the value of a B2B website. Sun Microsystems initiated a major project to discover how to improve its written information for online readers. This case study was included in the report in the 1<sup>st</sup> edition.

#### Problems / Goals

The Sun's team's goal was to rework existing pages to minimize cognitive load and enhance speed and efficiency.

#### Solutions

Users prefer to scan rather than read, want text to be short and to the point, and detest overly hyped promotional writing ("marketese"). Improvements in usability for new versions of the Web white paper occurred after the text was made either scannable, concise, or objective (rather than promotional) in style. When all three writing style improvements were combined, the final version of the page was the most usable.

## **ROI** Measurements

Condition	Task Time	Memory
Original	637	0.33
Rewritten	315	0.65

Task Time was measured as the number of seconds users took to complete the three tasks. Memory was measured as a combination of recognition (score on multiple-choice

questions) and recall (percentage of Java characteristics recalled) from the exam.

Whether intended to service a single person or an entire enterprise, all of these systems share some fundamental requirements — they must be reliable (when was the last time you rebooted your phone?), secure, accommodate future functional integration and service changes via software, thrive in a distributed network, support multiple tasks, increasingly have real-time response, and all while remain pricesensitive. And perhaps most importantly, applications created to run on these systems must be easily portable. Already, nearly half of such systems have more than one processor, and almost half employ more than one architecture.

Sun's Java™ language, as well as the applications its compilers create, answer many of the above requirements from the software side. First, it's simple. Java was designed as closely to C++ as possible in order to make the system more understandable, but omits many rarely used, poorly understood and otherwise confusing features of C++. Second, it produces small code. One of the goals of the Java language is to enable the construction of software that can run on a stand-alone basis in small machines. The size of the basic interpreter and class support is about 40 kbytes; adding the basic libraries and thread support (essentially a self-contained microkernel) adds an additional 175 kbytes.

Before: Sample text from original white paper.

Whether intended to service a single person or an entire enterprise, future network-computing systems share some fundamental requirements. They must be reliable, provide security, accommodate future service changes via software, operate in a distributed network, support multiple tasks, respond in real time, and remain price-sensitive. And perhaps most important, applications created to run on these systems must be easily portable.

Sun's **Java** language meets many of the above requirements from the software side:

- 1. It's **simple**. Java was designed as closely to C++ as possible, to make the system more understandable. But Java omits many rarely used and confusing features of C++.
- 2. It produces **small code**. One goal of Java is to enable construction of software that runs on a stand-alone basis in small machines. The size of the basic interpreter and class support is about 40 kbytes; the basic libraries and thread support add 175 kbytes.

After: Sample text from redesigned white paper.

### STATNETT (CELL NETWORK)

Product Homepage

Metric Task time in seconds

 Before
 7.875

 After
 3.5

 Ratio
 225%

 Improvement
 125%

### **Background**

Cell Network's Norwegian office employed 150 people in 2002, with expertise in both the technical and design aspects of IT and web development. (After this project, the company was renamed Bouvet AS.)

Its customers range from large-scale public institutions asking for complex IT systems, to commercial players in need of Web consultancy.

In Norway, Statnett is responsible for coordinating supply and demand in the power system. Being a transmission system operator, Statnett owns and operates large sections of the main Norwegian power grid and the Norwegian section of power lines and undersea cables to other countries. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

User testing revealed that users didn't easily notice the icons for "contact us," "search," "mail to," and "english," so some couldn't complete basic tasks.

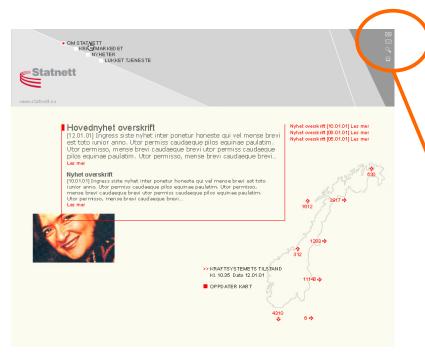
#### Solutions

The upper-right corner of the homepage was redesigned so that textual link labels replaced the icons and the labels lined up with the geometric shape so that it could help draw the eye to the navigation choices.

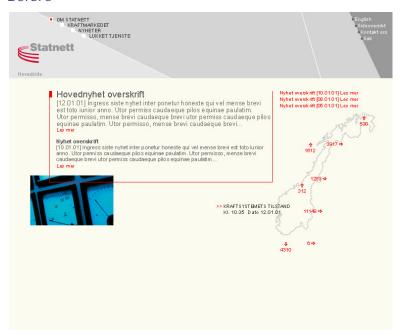
#### **ROI** Measurements

During the testing with the initial design, only one of eight people found the search icon in 4 seconds or less; it took 8 seconds on average.

After the redesign, 7 of 8 test users found the Search icon in 4 seconds or less.



#### **Before**



After

Users took twice as long to find the icons in the old design.

#### NATIONAL INFORMATION CONSORTIUM (DIAMOND BULLET DESIGN)

Product Homepage
Metric Task time
Before 1319.91
After 539.21
Ratio 245%
Improvement 145%

### **Background**

Diamond Bullet Design redesigned a US state government portal. The portal consisted of a government Web services directory (some provided by a different company) compiled from various government agencies, departments, and nonprofit entities. This case study was included in the report in the 1<sup>st</sup> edition.

#### Problems / Goals

Redesign the website to be more user oriented, and support customers' tasks (rather than the way the old site was structured, according to the department structure).

#### Solutions

- The original design organized most information by government agency. For example, a "Business & Commerce" section led to a set of content mostly developed by the Department of Commerce and Housing. The new architecture focused on other ways to approach the information, such as through the services provided by the agencies.
- The alphabetical lists of state agencies, which the previous site provided, often confused users. A thematically organized option was implemented in which the user navigated according to the *role* that they identified with.

#### **ROI** Measurements

Through user testing, statistically significant improvements were found on task success, time to complete a task, task difficulty, expectations of how long tasks would take relative to actual time, and how intuitive the paths were to desired information.



Before: Information was organized by government agency, such as the "Business and Commerce" section, which was all content created by the Department of Commerce and housing.



After: Content on the new site is organized by user tasks.

#### **ANONYMOUS NETWORK SUPPLIER**

Product Confidential Metric Task time

Before 1

After 0.3333 Ratio 300% Improvement 200%

## **Summary of Case Study**

The Marketing group wanted to add personalization, because they thought it was what users wanted. After usability testing they realized that personalization wasn't really what users wanted. Instead, they just wanted faster navigation, so they could get faster answers to their problems. *This case study was included in the report in the 1<sup>st</sup> edition.* 

Also, page scrolling on the personalization setup page was eliminated. This change caused associated task time to be reduced by nearly two-thirds.

For details about additional metrics in this case study, see the Other Types of Metrics section at the end of this report.

#### **MASTERCARD**

Product Website
Metric Success rate

 Before
 0.25

 After
 1

 Ratio
 400%

 Improvement
 300%

## **Background**

MasterCard launched its newly redesigned business site (MasterCardBusiness.com) in February of 2002. The redesign process was completed by an in-house team that worked with the various MasterCard departments. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

The primary business goals of the redesign were to encourage more business owners to get business credit cards, while also increasing both card use and transaction amounts. They also wanted to enhance the usability of the site and align the business site more closely with off-line marketing materials.

#### **Solutions**

The design team brought more content to the homepage – so users could immediately see what the website offers. In addition, they provided more-targeted content to various groups of users and presented direct links to common tasks.

#### **ROI** Measurements

Number of Usability Issues Identified	Benchmark Study (on Former Site)	New Design Study
High Severity Issues	12	0
Medium Severity Issues	18	7
Low Severity Issues	3	10
Total Issues	33	17

Success Rates*	Benchmark Study (on Former Site)	New Design Study
Find details about the credit cards that are relevant to your business.	1 out of 6 = 17%	6 out of 6 = 100%
Find out how you would apply for a card.	3 out of 6 = 50%	6 out of 6 = 100%
View the Small Business Newsletter.	0 out of 4 = 0%	4 out of 4 = 100%
Sign up to receive the Small Business Newsletter.	2 out of 4 = 50%	4 out of 4 = 100%

\*Here, "success rates" are the proportion of participants able to complete the task without assistance from the facilitator.



Before: The site was not organized around user tasks and did not present a clear visual hierarchy to help users choose a starting point.



After: The new design present direct links to common tasks, organized by audience type.

#### GAD.DK (SOLID CREATION)

Product Online Bookstore
Metric Calls to the help desk

Before Confidential After Confidential

Ratio (original to final) 500% Improvement 400%

The Gad case study is described in the Conversion Rate Metrics section, since that was the main metric in the project. However, help desk calls were measured as well, and are reported here. Calls were reduced by 80%, meaning that the original design prompted five times as many calls as the redesigned site. This means that the improvement was 400%, because one would have to hire 400% more operators to staff the help desk under the original design. This case study was included in the report in the 3<sup>rd</sup> edition.

#### NATIONAL INFORMATION CONSORTIUM (DIAMOND BULLET DESIGN)

Product Homepage Metric Failure rate

 Before
 0.28

 After
 0.05

 Ratio
 560%

 Improvement
 460%

### **Case Study Summary**

Diamond Bullet redesigned the website to be more user oriented and support customers' tasks. New architecture was created that focused on presenting information through the services provided to users.

The failure rate of the old portal was 28%; the new site failed only 5% of the time. For the full project report, see the previous entry in this section.

#### ANONYMOUS INTERNET SOFTWARE DEVELOPER - SUCCESS RATE

Product Content Management System

Metric Success rate

Before 0 After 1

Ratio Infinite (coded as 1000%)

Improvement 900%

### **Background**

This company, an Israeli–American company based in Tel Aviv, is a leading developer of Internet relationship management software and services for the global health and pharmaceutical industries. The company's flagship Web-based product is a complete technology platform for building and deploying highly targeted online healthcare marketing and business initiatives. This project was a redesign of one of their products, a Web-based content management system. *This case study was included in the report in the 1st edition.* 

#### Problems / Goals

The feature redesign presented here appears in the content management system and it is called Batch Management. It allows business users to group a number of content files and move them together from one stage to another.

There are 3 stages in this system: Editorial (create a content file), Reviewing (approve a content file) and Production (publish a content file on the website).

In the old system, users had to go through six screens in order to accomplish this goal, and even then it wasn't always successful.

These were the steps:

- 1. Create a new batch.
- 2. Name the batch.
- 3. Add content files to the batch.
- 4. Search for the content files you wish to add to the batch.
- Select the files and finish.
- 6. Move the file batch to the next stage.
- 7. Success?

## Solutions

In the new design, the batch management feature is gone. Based on usability tests, the design team eliminated the separate process for moving batches of files between stages and created an intuitive process which works for either one content file or many files at a time.

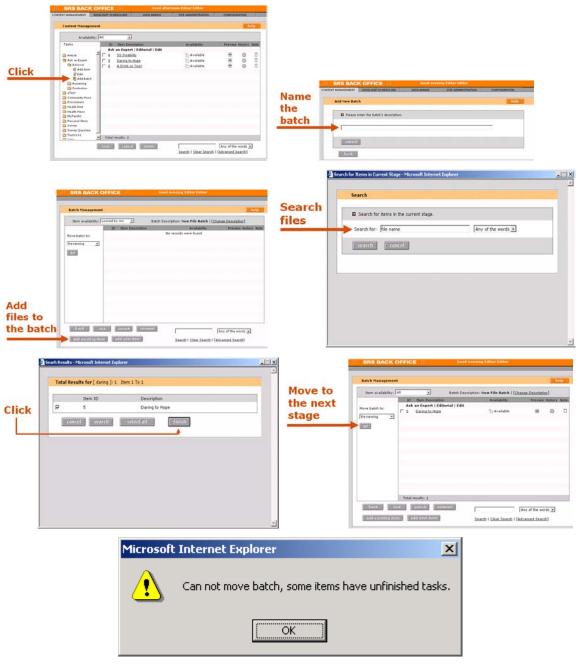
The new process includes only two steps:

- 1. Select content files.
- 2. Move content files to the next stage.

Unlike the previous design, this one is centered on the user's needs, not the technology.

## **ROI** Measurements

Measures	Before	After
Success Rate	0%	100%
Number of times the feature was used	Never	All the time
Task Usage Time	Ave. – 20 minutes	Ave. – 30 seconds
Training Time Average	2 hours	None
Comprehension Score	10%	100%



Before - The six steps to failure.





After - The two steps to publishing.

## ANONYMOUS INTERNET SOFTWARE DEVELOPER - TASK TIME

Product Content Management System

Metric Task time, in minutes

 Before
 20

 After
 0.5

 Ratio
 4000%

 Improvement
 3900%

### **Summary of Case Study**

In the old system users had to go through six screens in order to accomplish their goals and even that wasn't always successful. The new process included only two steps: Select content files, and move content files to the next stage. *This case study was included in the report in the 1<sup>st</sup> edition.* 

### TASK TIME IMPROVEMENT

Measure	Before	After
Task Time	Average – 20 min	Average – 30 sec

## **ROI CALCULATIONS**

The number of usability problems fixed	1
The average number of seconds saved	1170
The average number of times each task is performed each day per user	5
The number of product users	10
Average seconds saved per day per user	5,850
Average minutes saved per day per user	98
Total number of minutes saved per day by all users	980
Total number of hours saved per day by all users	16
The average hourly salary for software users	\$50
The product's life in years	2
Dollar amount saved per day	\$800
Dollar amount saved per year	\$184,000
Dollar amount of savings over the product's lifespan	\$368,000
The cost to perform usability activities	\$3,000
Net Productivity Savings	\$365,000

As shown in the above table, the estimated savings are more than one hundred times greater than the investment in the usability study.

This project measured task time in addition to other ROI measurements. To see the full case study, go to page **Error! Bookmark not defined.**.

## Other Types of Metrics: Development Time

Often, the greatest economic benefit of usability is that it can save immense investment in development time. Early usability research can focus project resources on those features and ideas of the most value to users and can save the cost of working on features that are not needed.

#### **ANONYMOUS NETWORK SUPPLIER**

Product Confidential

Metric Development time, in weeks

Before 13
After 10
Ratio 130%
Improvement 30%

## **Background**

A leading optical network equipment supplier wanted to update their website. *This case study was included in the report in the 1<sup>st</sup> edition.* 

#### Problems / Goals

One of the main advocates for the redesign was the marketing department. They wanted to add personalization, because they thought that's what users want.

#### Solutions

Rather than holding endless conference-room debates on what users might do, a quick usability test of a mocked-up user interface indicated that several of the personalization features had no user value. Indeed, after observing user behavior — rather than asking users — the Web team realized that personalization wasn't really what users wanted. They wanted faster navigation, and thus faster answers to their questions.

Page scrolling on the personalization setup page was also eliminated.

Final design: no personalization, clearer navigation, no scrolling.

### **ROI** Measurement

Not having to implement personalization cut three weeks out of a three-month development cycle for the online support website.

## **Acknowledgments**

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